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WESTERN BLISTER RUST NEWS LETTER

By the

Western Office, Blister Rust Control

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Spokane, Washington.





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W E S T E R N   B L I S T E R   R U S T  
N E W S   L E T T E R

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U. S. Department of Agriculture  
Bureau of Plant Industry  
Western Office of Blister Rust Control  
Spokane, Washington.



## RIBES ERADICATION - CALIFORNIA, 1928

W. V. Benedict

In contrast with previous eradication work in California which was largely on cut-over lands, the work this season was wholly within a virgin mixed-aged sugar pine forest. This area was selected for experimental work because it was typical of the unlogged sugar pine sites of the locality and was suitable to the large scale development of scouting methods.

A total of 8558.5 acres of sugar pine type was eradicated of 268,202 Ribes (an average of 31.34 per acre) at a cost of \$1.00 per acre. The following table gives the results of the work by type:

### RIBES ERADICATION, CALIFORNIA

Type	Acreage	Ribes Eradicated	Ribes Per Acre	Cost Per Acre	Cost Per Bush
Brush	86.7	25,827	297.89	\$5.70	\$ .019
Stream	266.7	48,828	183.08	5.64	.031
S.P. - Fir	986.9	42,438	43.00	1.33	.031
S.P. - Y.P.	6,372.4	151,109	23.71	.82	.035
Blocked out as Ribes-free	845.8	-	-	.03	-
Totals	8,558.5	268,202	31.34	\$1.00	\$0.031

Ninety-four per cent of Ribes eradicated were Grossularia roezli.

Checking results showed that 90% of the bushes and 95% of the live stem were found by the crews and eradicated. On 6750.4 acres checked there were found to be remaining 4.8 Ribes and 31 feet of live stem. Checking costs were \$0.075 per acre.

A small re-eradication job on 215.6 acres, scattered over the entire eradication area and representative of general working conditions, was undertaken. An average of 4.5 Ribes per acre was found. The cost of this experiment was \$0.68 per acre.

Scout crews of three men, and regular crews of four men and foreman were found to be most satisfactory in working the area. Advance check strips, 1/4 chain wide every 10 chains across eradication blocks, segregated into 2-chain transects proved effective in locating and eliminating from crew work, Ribes-free areas.

A 25-man camp was operated throughout the season.

## THE LARCH CANKER

E. E. Hubert

The introduction within recent years of larch canker, a fungous disease of living trees, to our New England forests has caused a justifiable uneasiness on the part of timber owners of the Northwest and Pacific Coast. The disease has been introduced from Europe where it is well known on European larch and has been found in this country attacking the native Eastern larch, and such introduced species as Douglas fir, yellow pine and spruce.

The larch canker has been reported in the British Isles, France, Holland, Belgium, Scandinavia, Russia, Germany, Austria, Hungary, Italy, and the Balkans. It has been reported from Newfoundland and, in 1919, a British writer predicted that it would soon be found in the United States.

It is feared that the Douglas fir, Ponderosa pine, and western larch forests of the West may become infected by the spread of the disease through the continuous broad strip of forest reaching from New England to the Pacific Coast across the Canadian timber belt. The present infection is centered in two New England states, Massachusetts and Rhode Island, where there are probably two to three thousand trees already infected. The disease may be present in many other localities but not discovered.

The larch canker has been studied in Europe by some of the earlier forest pathologists and it has been known in England since the early part of the nineteenth century. It is one of the most active and destructive diseases of forest trees. In Germany it has been so prevalent that larch growing has almost ceased. The disease spreads rapidly under favorable conditions and is very difficult to control. Unlike the white pine blister rust it has no alternate stage on some other plant upon which it must develop during part of its life history but is capable of being transmitted directly from tree to tree and from one species of tree to another.

The result of infection by this fungus, Dasyscypha calycina, is the production of large cankers on the main trunk of the tree and the death of infected side branches. It is an unusual type of fungus, for it can live and thrive on dead wood and may also readily develop on the live portions of a tree. Since dead branches are feeding grounds for this organism, on them are frequently found the small, cup-shaped and orange colored structures which produce one type of spores. Two types of spores are produced by this fungus and in this respect it is well equipped for rapid distribution.

Little harm is done directly by the presence of the fungus in dead branches but it follows the dead branch into the living tissues of



the trunk and there causes death of the living cells beneath the bark. The fungus does not attack the cells directly as do most of the parasitic fungi which infect trees but it appears, according to Riley, an English investigator, to send out a poison ahead of its advance and thus kills the larch cells in its path. The canker is the direct result of the killing of the living tissues, and as the killing continues the tree is soon girdled and dies. An excessive flow of resin usually accompanies the attack so that veritable puddles of resin are often observed at the bases of severely infected trees.

The disease is found on very young as well as on the older mature trees. On the former the attack often proves fatal, while on the older trees it produces cankers which ruin the trunk for commercial use. The Japanese larch is nearly immune to the disease but many conifers in this country are susceptible in varying degrees.

The fungus can attack the living part of a tree, (1) through wounds in the bark, (2) by following the dead branches down to the trunk and (3) by means of dead buds on the lower trunk. Poorly drained soil, high humidity, mild weather during fall and winter months, closely crowded stands and pure or nearly pure stands of timber all favor the rapid development of this disease. In Europe some hope of control is based on protecting the trees against wounds and by pruning of dead branches but in this country intensive control methods appear to be feasible only in small isolated patches of infected timber.

Dr. H. Metcalf, chief of the Office of Forest Pathology, U. S. Department of Agriculture, believes the larch canker to be the most potentially serious disease that has ever struck the United States. Its greatest danger, he states, is that it has proved to be very destructive to Douglas fir, yellow pine and other important timber trees of North America.

Those who have witnessed the effect of the larch canker on planted trees in the New England region report its rapid spread and destructive action. Mr. W. D. Humiston, General Manager of the Potlatch Lumber Company, Potlatch, Idaho has interested himself in this problem and has visited the infected areas in the New England states. He says "the disease strikes like lightning, spreads fast and renders the infected trees unmerchantable if it does not kill them outright". He declares that delay in removing the infected trees may spell the ruin of our immense stands of valuable timber now growing in the Northwest. Drastic measures applied quickly are essential at this time in order to avoid a loss similar to that caused by the chestnut blight, which according to Dr. Metcalf is capable of wiping out stands of chestnut valued at approximately \$3,150,000,000.

The opinion has been expressed that we may be too late now to stamp out this forest pest but delaying in order to see whether or not we are too late would be folly.

EXPERIMENTS WITH AND DEVELOPMENT OF CHEMICAL  
ERADICATION EQUIPMENT AND METHODS

C. C. Strong

Experiments with equipment for and method of applying chemicals for destruction of Ribes were pushed to the limit during the past field season and as late in the fall as weather conditions would permit. Even so, the results obtained did not yield a final answer as to whether or not power equipment for spraying bushes had a place in the future program. Knapsack equipment for spraying areas less dense with Ribes growth has been definitely proven more practical than hand pulling or any other method for destroying Ribes yet known.

In order to obtain a definite recommendation regarding this equipment it was decided to immediately conduct a further experiment with power versus knapsack equipment on areas of varying Ribes concentrations. Furthermore it was important that as many of the men as possible who will be dealing with Ribes eradication in the future be given a thorough training course. In addition several pack arrangements for knapsack equipment which had been developed during the early part of the winter needed a thorough trial in the field.

In order to complete this experiment before the early field season work begins, it was obviously necessary to choose a section in the West where weather conditions in January, February and March would permit such work and where Ribes were in leaf at that time. Southern California seemed to be the only possibility.

Offord, Strong and Swanson spent several days scouting areas from Berkeley south to Ventura. Only two suitable areas were found. The one chosen lies in the extreme northern limits of the Santa Barbara National Forest near Morro Bay in San Luis Obispo County.

Work was begun about January 10 with Swanson, Riley, Anderson, Rowe, Ganoung, Glasgow, Guernsey, Peterson, Geil, Simcoe, D. R. Miller, Harris and Breakey on deck. The work will perhaps be completed by March 15.

---

Swanson: (While scouting with Offord and Strong excitedly jumps from seat of car and points at hillside) Oh! Lookit! Lookit! Lookit! Mountain goat!

(Two seconds pass during which goat emerges from dense brush with large bell strapped around neck.)

Offord & Strong: Loud peals of mirth and laughter.

Swanson: \*\_x?XX--\*\*? etc.



SIDELIGHTS ON THE ABUNDANCE OF TELIOSPORES PRODUCED  
ON INLAND EMPIRE RIBES SPECIES

H. N. Putnam

On December 12, 1928 Mr. J. I. Mielke of the Office of Forest Pathology gave a most interesting talk on the results of the past five years' study on the relative susceptibility of the four common Ribes species of the Inland Empire, namely: Ribes petiolare, Grossularia inermis, R. viscosissimum and R. lacustre. A report on his paper is printed in the Western Blister Rust News Letter of Decemoer 15, 1928, Volume 3, No. 12.

By a series of sequential tables, Mr. Mielke expresses the relative values of teliospore production for the four Ribes species considered. Table 1, expressing percentage of total leaf area infected, is not necessary to the development of the final table, which pertains only to telial development. Table 2, the primary table in the series, shows the percentage of total leaf area bearing telia, varying according to species and growth form. Table 3 gives the result of a preliminary laboratory investigation, and shows the relative telia producing power, expressed in volume of telial horns, per unit of leaf surface bearing telia, again varying according to species and growth form. By weighing the figures for leaf area producing telia given in Table 2, according to the volume of telia per unit of surface, as in Table 3, he shows, in Table 4, the final relative telia producing power of each species and growth form, final because it expresses both surface covered by telia and volume per unit of surface.

Mielke's 4th table is reproduced below:

TABLE NO. 4

RELATIVE AVERAGE VALUES OF THE PRODUCTION OF  
TELIAL COLUMNS CLASSIFIED BY RIBES SPECIES  
AND DEGREES OF SHADING

Growth Form	R.petiolare	G.inermis	R.viscosissimum	R.lacustre
Open	2,398	579	29	1.7
Partial Shade	2,096	1,097	--	4.8
Shade	1,759	1,398	95	20.5

The meaning of data presented in Table No. 4 can be illustrated by an example. For instance, the open form of R. petiolare produces 2,398 times as many telial columns as one produced on 1.7 R. lacustre.

Mr. Wyckoff, during some of his leisure moments, has recast the data in Table No. 4. In Table No. 5 he has given a value of unity to production of telia on least susceptible species, that is R. lacustre in the open, and has expressed other values in relation to it.

TABLE NO. 5  
AVERAGE VALUES OF TELIAL PRODUCTION RELATIVE TO  
THAT VALUE FOR THE LEAST SUSCEPTIBLE RIBES FORM AS UNITY

Growth Form	Unit Values of Teliospore Production			
	R.petiolare	G.inermis	R.viscosissimum	R.lacustre
Open	1,411	341	18	1
Partial Shade	1,233	645	--	3
Shade	1,035	822	56	12

The meaning of data presented in Table No. 5 is that with the telial production of the open form of R. lacustre as unity, or 1, any figure represents the number of times that unit telial value will be produced on the given Ribes species of the given growth form. For example a given amount of leafage of R. petiolare growing in the open will produce 1,411 times as many telia as the same amount of leafage of R. lacustre growing in the open. R. lacustre in the shade will produce 12 times as many telia as the same amount of R. lacustre leafage, open form.

The information obtained by the Office of Forest Pathology relative to the ability of the common Inland Empire Ribes species to produce pine infecting spores is of such importance to the control program that it is well to look at it from as many angles as possible in order to grasp its significance. Therefore I have taken the liberty of recasting the material in another way.

Heretofore we have compared the production of telia on the basis of equal amounts of Ribes leafage. Let us compare the amount of leafage of different species necessary to produce the same quantity of telial columns.

TABLE NO. 6  
VALUES FOR LEAFAGE OF DIFFERENT RIBES SPECIES REQUIRED TO PRODUCE  
THE SAME NUMBER OF TELIAL COLUMNS WITH THE LEAFAGE OF  
R. PETIOLARE OPEN FORM AS UNITY.

Growth Form	Unit Leafage Values			
	R.petiolare	G.inermis	R.viscosissimum	R.lacustre
Open	1.0	4.1	82.7	1,411.0
Partial Shade	1.1	2.2	-	470.3
Shade	1.4	1.7	25.2	117.6

In Table No. 6 are shown the number of unit leafage values of different Ribes species required to produce the same number of teliospores as are produced on one unit leafage value of R. petiolare open form.

In other words one R. petiolare bush growing in the open is equal in production of telia to 1,411 R. lacustre bushes of the same size.

Expressing the results of the study of pine infecting power of the Inland Empire Ribes collected by the Office of Forest Pathology since 1924 in these different ways seems to emphasize the value of the eradication of R. petiolare and G. inermis from the white pine stands of the Inland Empire.

Acknowledgment: Thanks are due Mr. S. N. Wyckoff for giving me the impulse to write this article and also for the use of that excellent word "sequential".

### FALL GERMINATION OF RIBES

W. A. Rockie

In 1927 our experimental areas near Harvard, Idaho showed fall germination of Ribes seeds, while similar areas established in 1928 showed no such germination.

When two succeeding years give such markedly different results, one from the other, there is a cause.

The weather bureau records have been examined for causative conditions, and the following facts regarding the Spokane weather bureau records have been obtained. These records are at least comparable with the conditions in the field area under observation. These results are given in the following table:

### RELATION OF RIBES GERMINATION TO PRECIPITATION

Month	Normal Annual Precip- itation	Precip- itation in 1927	Precip- itation in 1928	Germination of Ribes Seeds on Plot Studies	
				1927 266 milacres	1928 62 milacres
January	2.16	2.18	1.75	-	-
February	1.77	2.71	0.22	-	-
March	1.20	1.36	1.88	-	-
April	1.13	0.89	0.93	-	-
May	1.42	1.24	0.48	-	-
June	1.28	0.98	0.43	Established be- -tween June 28 and Sept. 1	-
July	0.69	0.55	1.26		-
August	0.62	0.37	Trace		-
September	0.90	5.58	0.07	446	-
October	1.17	1.55	0.52	-	-
November	2.09	4.32	1.24	-	-
December	2.19	1.55	1.81	-	-
Annual	16.62	23.28	10.59	446	-

The differences between the two years, during August, September



and October are very striking. In 1927, the precipitation during these three months, was 7.50 inches, while in 1928 it was only .59 inches. In 1927, the August precipitation was divided as follows:

August 11	-	.01	inch
"	28	-	.04 "
"	29	-	.09 "
"	31	-	<u>.23</u> "
Total			.37 "

The first Ribes seedlings were found on September 4th and new plants continued to appear until between October 14th and October 29th. In 1928, even though a closer examination has been made of the areas, no fall germination has been found.

#### WITTICISM CALIFORNICA

Dear Roy:

So far as I know there isn't a piece missing from the camera that I have here. Patty and I went over the camera when you originally said that there was a piece of it left at the Spokane office and although we could not see that any part of the camera was missing, we thought that we might as well have whatever it was that you had found. Patty, I believe, wrote you and asked you to send it.

If you haven't got what you thought you had, don't send it because we don't need it.

---

C. F. Lackey, Junior Pathologist at the Citrus Experiment Station at Riverside, California, gave a blister rust talk supplemented by lantern slides, before the Rotary Club of that city. Mr. Lackey some years ago was employed by the Blister Rust Office in black currant eradication in the State of Washington.

---

During the 1928 field season in northern Idaho 1,299,346 acres were covered by reconnaissance at a total cost of \$12,328.28. This gives an average cost of 9/10 of a cent (\$.009) per acre.

#### NOTES

Glasgow and Peterson returned from quarantine inspection duty on December 15, 1928.

Root and Goodding made a trip to San Francisco on December 1 to interview officials of the U. S. Forest Service and the Office of Forest Pathology.

\* \* \*

S. N. Wyckoff attended the District 1 Forest Service Investigative meeting held in Missoula, Montana January 10 to 12, 1929.

\* \* \*

C. C. Strong returned from California on January 15. He reports the chemical eradication methods work well under way.

\* \* \*

The California climate is having its effect on the personnel of the methods project in broadening their vocabulary; the California brush may have something to do with it.

\* \* \*

Messrs. Detwiler and Goodding spent part of December scouting for Cronartium occidentale in southern California. The distribution of various Ribes species was also noted.

\* \* \*

The Christmas holiday season was spent by Wyckoff in California Joy in Portland, Oregon, Guernsey and Rowe in Moscow, Idaho, while Seattle found Mrs. Klatt, Anderson and Simcoe making "whoopee" in varying degrees.

\* \* \*

A lady came into the office recently to inquire about employment for her son. She said that her boy plays the violin so she would like to get him a job in the woods.

She wanted to get him a job where he didn't have to use his hands too much. She asked if he would have to scratch around with his hands to remove currants but was assured that he would be supplied with a grub hoe for that.

She wished to know if it would be all right for him to take his little dog with him. The dog was used to chasing around with him and having a great time.

A gentleman in the Forest Service told her that there was a weed in the woods called "Blood Poison". She didn't want him to get any of that.









WESTERN BLISTER RUST  
NEWS LETTER.

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U. S. Department of Agriculture  
Bureau of Plant Industry  
Western Office of Blister Rust Control  
Spokane, Washington.



## A NICE DISTINCTION BETWEEN RESEARCH, INVESTIGATION, STUDY AND EXPERIMENTATION

(The following excerpts are taken from the report of the committee to define research projects for the District 1 Investigative Meeting. Obviously, justice cannot be done in a limited space to their scholarly ten page report but it will probably interest all of us to have reproduced here the proposed definitions resulting from their study. Messrs. R. H. Weidman, E. E. Hubert, T. C. Spaulding and S. N. Wyckoff served on this committee:- Editor)

"It may be worth while to list the usual steps involved in a complete inquiry into a problem and to indicate which of these steps are employed by research, investigation and experiment. The steps are: (1) collection and classification of data; (2) analysis and correlation; (3) establishment of principles or relationship of facts; (4) evolution of working methods. A fifth step providing for practical application of the methods might be suggested, but this would be clearly administration, and thus outside of the field of scientific inquiry. Of the above steps, research employs 1, 2 and 3; investigation utilizes 2, 3 and 4, not ordinarily making use of 1 for the reason that existing facts are involved; study and experiment employ 1, 2 and 4.

### Definitions Proposed by the Committee

"It is clear from the variety of definitions found by the committee that research terms have not yet attained exact meanings generally accepted by scientific workers. For the most part, the definitions begin with the main generic connotations of the words, but beyond that the interpretation of meanings depends upon the particular field of research in which the writer happens to be engaged. A scientist in industrial research has a somewhat different conception of the terms than one in biological research. In view of this, the committee believes that it would fail of its purpose if it did not propose certain definite meanings of the terms given in this report for our own particular use in forest research. In framing these definitions it has adhered to the root meanings of the words, as far as possible, and has made use of the best interpretations and distinctions of the authorities quoted herein.

"(1) Research is protracted and thoroughly organized inquiry, carried out systematically by controlled methods, with the object of discovering new facts and determining their causes and effects. Its results are an extension of the field of human knowledge.

"(2) Investigation is organized effort leading to a thorough understanding of the reasons and relations of things already known, as distinguished from research, which has for its aim the discovery of facts, truths and relations not previously known.

"(3) Study is the process of acquiring information on the

quantity and character of known facts in order directly to draw conclusions or formulate methods. This is one of the lowest forms of scientific inquiry and is closely related to survey, census, and inventory. Immediate practical need is usually the reason for conducting a study.

"(4) Experimentation is inquiry in which certain physical conditions are set up as an experiment, with one of the variables under control, and with the object of determining the results empirically, i.e., by experience. The purpose may be to discover something new, or it may be merely for verification.

"(5) A project is a definite, scientific undertaking with a restricted objective and a clearly defined purpose, scope, and plan of attack. It is essentially a fixing of objective and boundaries to guide the investigator in prosecuting a piece of research work efficiently and free from the danger of digression into side lines. For the administrator, the project serves as the most convenient unit in planning, financing and supervising the various lines of work of a larger research program. There may be research and study projects, investigative and experimental projects.

"A project may be a small or a large undertaking. It may be carried out by one or several individuals. It may require a long or a short time for prosecution. With regard to smallness, a single test-tube experiment, for example, would hardly justify designation as a project. The same thing may be true of a single isolated sample plot in the forest."

#### COWS OR GOATS??

J. L. Mielke

Oh give me a June day, but not another like this. Low-hanging clouds obscured the lofty peaks which rise abruptly from the valley floor. It was cold, and rain had been falling most of the time. The brush was thick and, needless to say, wet. It was about 6:00 p.m. when four wet and tired blister rust investigators from the Portland office started plodding their weary way to camp some two miles distant. The scene was a lonely, isolated spot in British Columbia.

Upon reaching camp we found it to be invaded by a peculiar species of bovine that had crawled through a fence constructed of light poles. A meager description of these cows might here be appropriate. They were about the size of large deer, white with red spots, lean and lank, and with slender curved horns. They were as wild as they looked. Standing in the midst of what they had left of our camp, they completed a prospect of wild desolation. We drove them out and then took stock of the damage.

The camp was wrecked and a family of bears couldn't have

done a better job of it. They certainly had a varying appetite. Our two-weeks grub supply was practically all devoured when we interfered, and what little remained was ruined. Only the canned goods had not been touched, but one cow was observed looking for the can opener with eager anticipation. Her search was stopped, however, by a well-directed rock. We were thankful that they were cows and not goats, for our canned goods might also have disappeared.

Following is a list of delicacies (?) that evidently appealed to their particular tastes: soap, four shirts, matches, lemons, crackers, cheese, pair of pajamas, onions, rice, beans, four pairs of sox, bacon, ham, cookies, bread, butter, pancake flour, rolled oats, mulligan stew, pair of trousers, four kinds of dried fruit, and potatoes.

Warning to campers, "Beware of cows with red spots".

### A BIG SUGAR PINE.

The following is taken from an article in the January issue of the Timberman:

"One of the largest sugar pine trees growing on the Red River Lumber Company's holdings near Westwood, California, was felled a few days ago. The tree, when bucked into sawmill lengths, required 3 logging cars to convey it to the mill. The log scale showed the tree to contain 27,570 feet. Diameter at stump was 101 inches, at second cut 84 inches and at the third cut, 75 inches. Growth rings showed age of tree to be about 650 years."

### THE SCIENTIFIC METHOD

Particular facts form the foundation  
For general laws of our formation;  
These general laws are a construction  
From separate data by induction.  
They are not based on rules hypothetical,  
Or a standpoint of knowledge theoretical,  
But the basis of each and every fact is  
Science in the sphere of practice;  
For our results we place reliance  
On every factor known to science,  
And knowledge gained at every station  
Is from unbiased observation.  
With tested facts we heal the schism  
Which may be caused by skepticism,  
Protect resources of the nation,  
And "do our bit" for civ'lization.

R.L.M.



## IMPORTANT DISEASES OF WESTERN WHITE PINE

B. A. Anderson

(Continued from the December issue)

### Wound Parasites

Wound fungi which include the principal wood rots of white pine may gain an entrance to the tree thru dead branch stubs, logging injuries, lightning injuries, deep blazes, frost cracks, or fire scars. A stand of white pine is relatively free from heartwood infections before it reaches the age of 50 years. The fungus, once it has effected an entrance then goes thru a period of growth, breaking down the wood substance and pushing the mycelia further into the tree.

Sporophore production in white pine reaches its maximum in the 121-160 year age classes. The pathological cutting age of the tree would then fall into the 101-120 year age class. From the standpoint of the forester the ideal cutting age would be when "the net increment of sound material passes its maximum". The rotation for white pine has been placed at 100 to 120 years of age.

In view of the above facts, losses due to rots in western white pine stands can be greatly reduced, provided that the requisite pathological marking and cutting rules are followed and slashing on logging areas is disposed of by proper methods.

Red ring rot, red-brown butt rot, spongy sap rot, and spongy root rot are the principal rots caused by wound fungi in western white pine.

### RING SCALE FUNGUS

(Trametes pini)

The ring scale fungus produces a typical trunk rot although at times it may occur as a butt rot. It secures its entrance to the tree principally through dead branch stubs. The incipient stage of decay appears as a reddish discoloration of the heartwood. The mycelium progresses through the stub into the heartwood and then upward and downward but to no great extent in a radial direction. Several annual rings may be destroyed before any material progress in a radial direction is made. Hence the name of red ring rot is very appropriate.

The presence of red ring rot in a tree may be detected by swollen knots, swellings at the branch whorls, or the presence of fruiting bodies. Swellings on the trunk may indicate where conks have been present but have fallen off; if they are cut open a brownish, punky substance will be noticed if red ring rot is present. In cross section the rot column is circular or crescent shaped. More or less patchy sound heartwood is found between the rotted areas. The

rot column extends two to four feet above and four to six feet below a conk.

The rot is a white pocket rot. The lignin in the wood substance is broken down and the cellulose complex left in pockets with pointed ends. During the incipient stage the strength of the wood is not affected to a great degree. Usually narrow brown or black zone lines are found in the rot.

The conk is large, brownish, sometimes hoof shaped, but usually thin and shell-like with scalloped edges. Pores on the underside of the conk are large and somewhat irregular in shape. A new layer is added to the conk each year. The conks are perennial and remain on the tree for a period of years.

#### VELVET TOP FUNGUS (Polyporus schweinitzii)

The velvet top fungus causes a red brown crumbly butt rot. Fire-scarred trees are readily infected by this fungus. White pine under eighty years of age is seldom attacked.

In the early stages of decay the infected wood appears pale yellowish and is soft, cheesy, and moist in freshly cut wood. During the later stages the wood turns to a dark red-brown and breaks more or less into cubes which can be crumbled to powder in the fingers.

The rot is found in the butt and roots of the tree. The rot column is uniformly circular and seldom extends into the trunk beyond the first log. There are seldom any external signs of the presence of the rot. Soundings for hollowness are the best reliable indicators of red-brown butt rot.

Sporophores are annual and usually appear at some distance from the base of infected trees. They are rarely found on the tree. The sporophore is usually circular in shape and supported by a short thick stalk. The upper surface is a light brown when young and a dirty green on the lower surface. Old sporophores are quite corky in texture and dark brown in color.

#### ROOT FOMES (Fomes annosus)

The root fomes causes a rot in the sapwood of the root known as spongy sap rot.

Incipient decay is characterized by a lilac or pinkish discoloration of the infected wood. The summer wood is more readily attacked than the spring wood which may cause a ring scale condition. Spongy sap rot is a white pocket rot. The pockets are small, white cellulose pits and may be characterized by black dots in their centers.

In the late stage the wood becomes a white spongy mass. The rot seldom extends over eight feet up into the trunk of the tree.

Relatively few people are acquainted with this rot. This is probably due to the inconspicuousness of the sporophores. Conks are to be found in the root crotches where it is difficult to observe them because of their hidden position and the similarity in appearance of the brownish colored conk to forest duff. The conk is zoned and is white to yellowish on the under surface. A large number of windfall trees in a stand may be attributable to the presence of the root fomes.

A similar root rot to that produced by the root fomes is spongy root rot produced by Povia subacida. The conks of this rot are whitish layers of fungous growth occurring on the under side of roots and root crotches.

Soundings on the butts of trees for hollowness is probably the best means of detecting the presence of both of these rots.

#### References:

1. Manual of Wood Rots for Cruisers and Scalers in the Inland Empire by E. E. Hubert.
2. Study of the Rots of Western White Pine, U.S.D.A. Bul. No. 799 (1919) Weir & Hubert.
3. Manual of Tree Diseases by W. H. Rankin (1923).
4. Manual of Plant Diseases by F. D. Heald (1926).
5. Diseases of Commercially Important Conifers in the Pacific Northwest. J. S. Boyce, U. S. Forest Service Study Course 1923, District 6, Course V, Enemies of the Forest, Part I-Disease. Re-issued 1926.

#### THE CLIMBERS?

H.E.Swanson

The members of the Office of Blister Rust Control stationed at Morro Bay attended a bridge party given by Los Amigos del Morro at the home of Wm. Matson, January 31, 1929. This debut into the social life of Morro Bay was made more significant when two of our men captured both prizes offered. Percy Rowe with a score that looked like Rockefeller's bank account was presented with a cigar lighter that lights, while B. A. Anderson thru no fault of his own, could count his score on his fingers and two thumbs. As consolation honors, Andy was presented with a delightful puppy dog, a live one. Without suffering any embarrassing moments, Andy finally got the pup home. The poor little pooch, after being pushed from place to place, since his newly found master was unacquainted with the intricacies of raising dogs or



children, had to be returned to the original owner.

As for the party, everyone enjoyed himself and ate heartily of the enchilada which was served.

#### PINUS MONTICOLA POLLINATES

J. L. Mielke

An unusual sight in the form of a huge pollen cloud was witnessed by the writer and two other members of the Portland office while doing some work on white pine blister rust investigations in the Kootenay District of British Columbia. It was the latter part of June in 1928. A thunder storm preceded by a very strong wind was approaching from the west. The path of the storm was down a valley bordered by high mountains. We were working within this valley and on the north side of a creek flowing thru it. On the opposite side of the creek, the valley floor sloped gently upward forming somewhat of a bench about one-half mile in width between the creek and the adjoining mountain. On this bench is an almost pure stand of western white pine of pole and standard size.

While seeking shelter from the storm under some trees, we chanced to look in the direction of the pine stand and observed that as the strong gusts of wind swept over these trees, large clouds of pollen were carried into the air. In a very short time there was a solid cloud of pollen directly over the trees, estimated to be about one mile in length, one-quarter mile in width, and averaging about one hundred fifty yards in depth. The pollen was so dense that it entirely obscured the landscape on the opposite side of it from our view. In color the cloud resembled dense sulphur dust. The following day our work took us to the shores of a nearby lake which was partially in the path of the pollen cloud, and it was observed that the surface of the water at one end of the lake was entirely covered with the pollen grains.

#### "TOO LATE! TOO LATE!"

By one who knows and knows.

"My boy," said the saw-bones of San Luis Obispo, after a careful examination, "I find your heart is in the right place, and a skilled inspection of the precordia reveals no undue bulging or pulsations, which is confirmed by palpitation. I have percussed the dullness of your heart by stethoscope. There is a slightly diminished intensity of the heart sounds but that is probably attributable to the fact that you haven't done a lick of work in your life. Readings on the sphygmomanometer show the systolic and the diastolic of the blood pressure to be displeasing. I have looked for a functional arrhythmia and find the cardiac field of response not all that it

should be. You are suffering from a secondary anemia with a color index below one.

"The physiological reflexes including the epigastric, abdominal, and cremasteric show you have a fondness for late hours and the Pantages.

"Ah Ha! here is what I have been looking for. You are afflicted with anaesthesia, analgesia, thermoanaesthesia, hyperaesthesia, paraesthesia, and the worst, itchitis!"

"My God!" quoth Guernsey, "notify my wife at once. I've got poison oak. OH DOCTOR!"

Note: All credit or blame for spelling assumed by Anderson.

### HOW MANY RIBES MAKE A MILE

E. L. Joy

While perusing the great mass of sheets filled with Ribes pulling, stake driving, pine planting, wire stringing data secured at our vacation ground, the Cheekye Plot, the writer arrived at several totals of work done from 1923 to 1928. One of these was the total feet of Ribes live stem pulled during the 6 years of intermittent hard labor by the various members of the office under the ever-enthusiastic leadership of "le petit Colonel", H. N. Putnam, otherwise known as "Put".

Now 48,231.75 feet of live stem doesn't mean much to a crew of Ribes hounds on a stream type job, but Put had a great vision upon learning of this total. "Why, that's 9 miles of live stem; enough to reach from Cheekye to Squamish!" ejaculated Put.

True, brother, true! 9.13 miles to be exact, so we might extend that line to the Squamish dock.

\* \* \*

A short radio talk on the general blister rust program was broadcast from Station KQW at San Jose, by O. W. Newman of the Office of Public Relations of the California State Department of Agriculture. This was presented on January 22nd, together with articles on other subjects of interest to agriculture.

By a system of remote control, the articles are read in the radio room of the Department of Agriculture in Sacramento, being simultaneously relayed to San Jose and thence broadcast.

## QUARANTINE INSPECTION

Assignment of blister rust personnel to quarantine inspection points has been made as follows: Seattle, Washington - A. H. Glasgow; Portland, Oregon - C. O. Peterson; Ogden, Utah - W. F. Painter; Denver, Colorado - G. M. Whiting; Spokane, Washington - B. A. Ganoung and P. S. Simcoe. Inspection work started at Seattle and Portland on February 15 and will commence at all other points on March 1st.

### POISON OAK REMEDIES, FROM MORRO BAY, CALIFORNIA.

1. Alcohol (externally).
2. Crystal White soap.
3. Naphtha soap.
4. Spirits of camphor.
5. Tea made from cambium layer of elderberry.
6. Tom Harris' hiccups were cured by someone's suggestion of a quick surprise and Tom recommends same treatment for poison oak.
7. Hypo-sulphite of soda plus one gram of glycerin.
8. Hold head under water every half hour for thirty minutes.
9. Blood root powder plus vinegar.
10. Sugar of lead solution.
11. Two shots of serum.
12. Two sticks - inquire of Frank Breakey.
13. Daily bath in water treated with soda.  
This method proved highly unpopular, most of the boys explaining that Saturday night ablutions - - besides there wasn't enough hot water.
14. Stay in the Spokane office.

### NOTES

Aaron Glasgow returned from the California experimental project on February 2 after suffering from a serious attack of poison oak.

C. O. Peterson arrived in Portland, Oregon, on February 15, to commence inspection duties.

George Root and Mr. Mackie who is in charge of state spraying work in California, visited the Morro project on January 19.

H. G. Lachmund of the Office of Forest Pathology at Portland, was a visitor at the Sacramento office during January.

Excerpt from a legend - "The chemical solution is pumped thru a  $\frac{1}{2}$ -inch main line hose to the eradication strip where it is fed thru  $\frac{1}{4}$ -inch laterals to the individual crewmen."

Note: In order to facilitate the making of an annual index of News Letter articles, pages are being numbered consecutively from issue to issue throughout the year.









W E S T E R N   B L I S T E R   R U S T  
N E W S   L E T T E R

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Confidential  
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U. S. Department of Agriculture  
  Bureau of Plant Industry  
Western Office of Blister Rust Control  
  Spokane, Washington



As chemical eradication has assumed an important place in the program of local control we are giving in this issue, for the purpose of ready comparison, a summarized account of the 1928 project at Bovill, Idaho (information from the annual reports of Strong and Swanson) followed by Swanson's account of the work at Morro Bay, California in January and February, 1929.

EXPERIMENTAL APPLICATION OF CHEMICAL ERADICATION,  
BOVILL, IDAHO, 1928.

The results of experimental application of chemicals for the destruction of wild Ribes during the period previous to the 1928 field season demonstrated conclusively that dense concentrations of such bushes can be destroyed cheaper by this method than by hand pulling. These experiments further demonstrated that continuance of the work should follow two general lines, namely, application of chemical spray by means of hand pumping knapsack equipment and the same by means of motor driven pressure equipment. Investigative effort had resulted in the discovery of suitable toxic chemicals and had proven that a high degree of killing resulted from one application of such chemicals in the spray form to the leaves and stems of bushes during the growing season.

The purposes for which field work was done were: to gain further information regarding the degree of practicability of chemical eradication; to determine whether hand operated or power driven equipment was the more practical or whether there was a field for both; to determine accurate cost figures by each method under various conditions; to determine the most practical field organization and crew unit for use with each method and to train personnel for carrying on future work.

The area chosen for experimental work was near Bovill, Idaho. All of it is classed as white pine type and most of the stand is mature. There are two main streams in the area, the East Fork of Potlatch Creek on which the stream type averaged a little over two chains wide and Rob's Creek on which the stream type averaged one and one-half chains in width.

Hand eradication was carried on in conjunction with the chemical work, that is, the outer fringes of the stream type where Ribes are scarce were worked by hand methods.

Methods.

Three methods of crew work were used during the season in knapsack spraying. The first was the crew method with three to five men working in line. The second was the combination method using both hand pullers and knapsack men in the same crew and the third was the individual block method. The third method succeeded in eliminating most of the lost motion of crew work and replaced it with an individual responsibility and a competitive feature conducive to faster and better work. The combination method was the most costly method of the three while the individual block method effected a saving in

both man hours and gallons of chemical per acre over the other two.

Three methods were used during the season in power spraying with the individual block system showing the best results as in knapsack work. The first method was a crew formation where four or five men worked abreast taking a strip along the stream type. As the main line hose was laid for each strip there was much duplication and lost motion. Operating costs were excessive for so small a unit.

In the second method developed the main line hose was laid only once up stream and once down stream. Therefore much lost time otherwise spent in successive movings of the main line was eliminated. It was possible to work a much larger area without moving the unit than in the first but there was a good deal of time lost in moving equipment.

The third and most efficient method was the individual block system developed just before the season ended. As this method was used for only a short time it was not given a trial in all Ribes concentrations but it is possible that it may prove more practical than knapsack work in the heavier concentrations. This method was used in the Morro Bay experimental work and is described in greater detail in this issue.

The comparative costs of the three units of eradication used on the Bovill project with the best method in each unit are shown in the following table:

#### RESULTS OF WORK BY EACH METHOD

Per Cent Ribes Concentration	Size of Experimental Area Worked by Each Method	Knapsack			Power			Hand Pulling	
		Man Hrs. per Acre	Gals. Chem. per Acre	Cost per Acre	Man Hrs. per Acre	Gals. Chem. per Acre	Cost per Acre	Man Hrs. per Acre	Cost per Acre
1	6 acres-Knap.								
	6 acres-Power								
	7 acres-Hand	2	8	\$ 2.76	3.4	11.4	\$ 4.42	10	\$ 7.50
1-5	4 acres-Knap.								
	4 acres-Power								
	6 acres-Hand	3	11	4.02	4.0	15.0	5.40	17	12.75
5-15	16 acres-Knap.								
	14 acres-Power								
	1 acre -Hand	7	35	10.50	16.0	81.0	24.12	133	99.75
15-25	2 acres-Knap.								
	4 acres-Power	10	75	18.00	18.0	162.0	35.64		
25-35	$\frac{1}{2}$ acre -Hand							243	182.25
100	1 acre -Knap.								
	1 acre -Power	50	359	88.08	30.0	397.0	74.64		

NOTE: The individual block system in power work was tried only in concentrations of 1% and 1-5%.



### Eradication Results.

The following table gives data on each type of work done on the Bovill area:

Method	Total Cost	Acreage	Cost Per Acre
Hand Pulling	\$ 2,301.75	306.60	\$ 7.51
Power	5,408.75	55.68	97.14
Knapsack	7,820.02	175.08	44.67
Total	\$15,530.52	537.36	\$28.90

A great variation in average cost per acre exists between hand pulling, knapsack and power spraying. This variation is accounted for largely by the varying densities of Ribes growth where various methods of working were followed. Hand pulling is seldom practical where Ribes density averages more than 1 per cent of ground covered over extensive areas. On the other hand areas adapted to spraying range from 1 per cent to 35 per cent density over extensive areas.

From data presented it would seem that protective costs, on areas of dense Ribes growth such as stream type, are excessive. However, this work has only begun and it is conservatively estimated that costs by both knapsack and power methods could be cut to one-half the present costs. Had the entire work for the season been done at a rate comparable to the best work done near the close of the season and a 10 per cent solution of spray been used the cost of the job would not have exceeded the figures shown below:

Method	Total Cost	Acreage	Cost Per Acre
Hand Pulling	\$2,301.75	306.60	\$ 7.51
Power	2,784.00	55.68	50.00
Knapsack	4,377.00	175.08	25.00
Total	\$9,462.75	537.36	\$17.59

The combined work done by hand pulling and spraying resulted in a relatively high degree of protection to 10,000 acres of white pine timber or reproduction. With the total cost for the job of \$15,530.52 the average protection cost for the first time over is \$1.55. Since this particular township was probably one of the heaviest jobs to be done, it is not at all impossible that the average cost per acre over the Inland Empire white pine belt will be about \$1.00 per acre for covering stream type the first time.

### EXPERIMENTAL CHEMICAL ERADICATION, MORRO CREEK, CALIFORNIA, 1929 H. E. Swanson

At the close of the 1928 field season practical methods in chemical eradication of wild currants and gooseberries had been developed in both power and knapsack spraying. Sufficient data were not obtained

at that time as to the comparative costs of eradication by these two methods of spraying in the various concentrations of Ribes. Also, during the months following the 1928 field season a careful search was made for equipment which might be better suited to the work, while some special equipment was designed and constructed by members of the office. For carrying on the eradication work in Idaho during 1929, there was a lack of qualified supervisors with sufficient training in chemical eradication. Consequently, it was with the following three-fold purpose that an experimental project was conducted in California during the months of January and February 1929:

1. To determine the relative costs of eradication by power spraying and knapsack spraying in various Ribes concentrations.
2. To make a thorough test of all the new and special equipment secured or designed for the work.
3. To provide training for future camp supervisors in chemical eradication.

An area on Morro Creek, California in the northern end of the Santa Barbara National Forest was selected for the work. This was the only area on which conditions were comparable enough to those of northern Idaho, to make it satisfactory for the purposes of the experiment. Actual experimental work was begun on January 11, 1929 and was completed February 15, 1929.

Thirteen of the permanent personnel of the Spokane office performed all the work connected with the experiments. These men, who may sometime in the future supervise chemical eradication units, were taken from the personnel of the eradication and reconnaissance projects.

### Results

A. Determination of the relative costs of eradication by power spraying and knapsack spraying.

#### 1. Results in heavy concentration. 30% - 40%.

Method of Work	No. of Acres	Man Hours Spraying	Man Hours Assisting	Total Man Hours	Gals. of Chem.	Per Acre			
						Man Hours Spraying	Man Hours Assisting	Total Man Hours	Gals. Chem.
Power	30	252	75	327	2,600	8.4	2.5	10.9	87
Knapsack	30	299	64	363	2,339	10.0	2.1	12.1	78

#### Cost per acre:

Power - \$16.76  
Knapsack - 15.92



### Basis of Costs:

\$ .90 per man hour - power. \$ .80 per man hour - knapsack. \$ .08 per gallon chemical.

The spread in cost per man hour between knapsack and power work is largely accounted for by the heavier charges for operation and repair of equipment and purchase of fittings for hose lines in power work. The basis of depreciation each season was computed as 100% on knapsack and only 33-1/3% on power equipment. Actually 100% depreciation for knapsack may be too high and 33-1/3% for power too low, but we have not sufficient data to prove this. The difference of \$.10 per man hour is a minimum figure.

### 2. Results in medium concentration 10% - 13%

Method of Work	No. of Acres	Man Hours Spraying	Man Hours Assisting	Total Man Hours	Gals. of Chem.	Per Acre			
						Man Hours Spraying	Man Hours Assisting	Total Man Hours	Gals. Chem.
Power	23	113	34	147	939	5.0	1.4	6.4	41
Knapsack	23	79.7	13.3	93	692	3.4	0.6	4.0	30

### Cost Per Acre:

Power - \$9.02. Knapsack 5.64

### 3. Conclusions

- In heavy concentrations, the cost of power work is 5% greater than knapsack.
- In medium concentrations, the cost of power work is 60% greater than knapsack.

### B. Methods Employed

#### 1. Power

The power organization consists of a foreman, a main hose line man, a mechanic, and ten sprayers. For this unit, there are two 2-cylinder motors, 2,200 feet of 1" main line hose in 100-foot sections, 3,000 feet of  $\frac{1}{4}$ " hose for laterals in 300-foot sections, 400 feet of extra  $\frac{1}{4}$ " hose in 200-foot sections, 10 utility trigger nozzles with 4-foot extensions and ball checks, and 20 Y cut-offs. The method consists simply of main line hose laid down the valley and the men spraying individual blocks of the stream type along this main line. There is never a move of the entire unit at the same time. The main line hose is moved down section by section and coupled in at the lower end, and each man when he finishes a section takes his lateral hose and couples in at the lower end of the main line.

#### 2. Knapsack

One foreman and six sprayers, equipped with knapsacks, pack boards, double action pumps with nozzles and 2-foot extensions, constitute the crew unit. In this method each man sprays independently of the others. He is assigned to a block consisting of a chain or two of stream type

laid out in  $\frac{1}{4}$  chain strips by the foreman. Filling stations are established by the foreman every two or three chains along the stream. The men mix their own chemical solution.

### C. Test on New Equipment

#### 1. Power

a. The solution cooled motor proved a great improvement on the air cooled system formerly used.

b. A ball check arrangement on the nozzle end of the laterals proved very satisfactory and made possible the working out of the individual block system in power spraying.

c. Four foot  $1\frac{1}{8}$ " iron extensions were an improvement over the heavier  $\frac{1}{4}$ " pipe formerly used.

#### 2. Knapsack

a. The double action pump proved a great advancement over the single action pump. Fifty pounds pressure could be obtained with ease which made possible the use of a No. 111 fine nozzle which makes a 20% saving on spray over the coarser nozzle which the single action pump required. Out of three makes of double action pumps, only one, known as the Brown pump, proved to be strong and durable enough for the work.

b. Two foot  $1\frac{1}{8}$ " iron extensions were used to good advantage in place of the  $\frac{1}{4}$ " iron extension.

c. Four general types of pack boards for carrying the tanks were given a trial by each man, and in this group, the Trapper Nelson pack board and a frame constructed from channel iron and covered with canvas were most satisfactory. These two types of frames are similar in shape.

d. Two canvas knapsacks had been constructed but they failed to hold water.

e. A double nozzle was devised for spraying heavy concentrations. Although this nozzle accomplished a saving in time, such saving did not compensate for the additional number of gallons of spray used.

### D. Training Project.

Thirteen men obtained a thorough training in chemical eradication, which should enable them to take over field projects during the coming season. This training included work in all the various tasks in both power and knapsack operations, which provided the men with a thorough knowledge of all the details of both methods. The training also included instruction in the various types of equipment and their use and repair. The problems of chemical eradication were brought to the attention of thirteen men and

with the combined thought of this group of permanent personnel, various improvements were made in the methods of work.

### Plans for Future Work

As the results obtained in the experiment are only indicative of the true relation between the costs of eradication by power and knapsack spraying, a season's work with power will give sufficient data on the basis of practical application of chemical, to make a final decision on the merits of power spraying. It is also necessary to determine the relative costs of knapsack spraying and hand pulling in the lighter concentrations of Ribes and to determine in so far as possible where the scope of hand pulling methods ends and that of knapsack spraying begins. Continual effort and search will be made to improve upon the equipment being used. Further studies will also be made in methods of work. With hardly the equivalent of one season's work directed toward this end, it is not expected that the most efficient methods have been developed or the most practical equipment found.

### MEMORANDUM TO FIELD MEN

Gentlemen:

In view of the difficulty in keeping a proper charge record of official property issued to individuals, it is necessary to comply more carefully with previously promulgated regulations.

At the time that any Government property charged to you is to be transferred to another employee in the field, obtain a receipt on the office receipt form showing to whom charged and from whom received and forward same to this office with request that the office records be changed accordingly.

Unless such record is forwarded to the Spokane Office no transfers will be recorded.

(Sgd.) Roy Calhoun,  
Junior Administrative Assistant.

### FOREIGN BLACK CURRANT PLANTS DESTROYED

G. A. Root

Apparently eluding the inspectors at the port of New York, several cultivated English black currant bushes reached Ventura County in this state. These were brought in with personal baggage by a party who had visited Ireland.

The Horticultural Commissioner was informed of the presence of these plants by the owner who desired an inspection of the same. On perceiving the kind of bushes, the Commissioner promptly destroyed them.

The inspection of plant material from whatever source is made



a paramount issue in this particular county to protect its commercial plantings of orchard and truck crops from insect pests and plant diseases. Constant educational propaganda has resulted in a high degree of efficiency being attained in this particular phase of protection. It undoubtedly resulted in these bushes being brought to the Commissioner's attention.

### LIVE AND LEARN

Expense accounts recently submitted to this office indicate a tendency on the part of field men to omit a statement which should appear as the first entry of each account when the previous expense account was concluded at a point other than official headquarters, that is, where the employee was located on the last day of the previous month and the day he arrived at that place. For certain February expense accounts a statement similar to the following should have appeared as the first entry in each:

"Jan. 31, 1929. At Morro Bay, California. Arrived there Jan. 10, 1929", followed by February expenses entered in chronological order.

It is also required that employees who are stationed for more than thirty consecutive days at a point other than official headquarters must include in each expense account, covering expenses incurred at that point, a statement of the time of arrival thereat and the approximate date of return to official headquarters. (See paragraphs 48 and 48-a Revised Standardized Government Travel Regulations.)

### ANOTHER SPOKANE CITIZEN FELL

California does leave its mark on our Washingtonians. At least on his return from six weeks in the intoxicating ozone of the South one of our number was engaged in conversation regarding the tough qualities of various woods. This new native son, who resides in Washington, recently lived in Idaho, and originally was a New Yorker, started telling about how tough the wood was from the real Big apple trees which grow in New York. He described these apple trees as follows: 150 feet high (later tabulation of facts reduced it to 100 feet) with the lowest limbs beyond the reach of a 50-foot extension ladder, which he used in trimming said trees. The apple crop was gathered between 50 and 100 feet distant from the ground.

Let us try to visualize this wonder tree as related to Spokane landmarks. The old Paulsen Building (160 feet) would tower only 10 feet above the famed apple tree, as originally estimated. The scrubby dwarfed tree, with 50 feet pruned from its height, would be only about as high as the Realty Building. Even though a 50-foot ladder wouldn't reach the lower limbs we could pick apples from the lowest limbs from the Blister Rust Office windows on the sixth floor. In any area of such trees one would not count the number of trees per acre but rather the number of orchards per acre.

## VITAL STATISTICS - CHEEKYE

Progress record for Pine No. W.6-22, Cheekye Plot:

Oct. 1927	.2 feet high	O.K.	Nearly dead.
May 1928	.2 " "	O.K.	May live.
Oct. 1928	.2 " "	O.K.	Recovering.

### NOTES

A blister rust talk, illustrated with lantern slides, was given by C. H. Johnson on March 6 before the Montana Forestry School Club at Missoula, Montana. 75 students, professors and visitors attended the meeting.

\* \* \*

Percy Rowe left the office on March 12 to accept an appointment with the Forest Service at Ogden, Utah.

\* \* \*

Painter and Whiting left on February 28 to take up quarantine inspection duties at Ogden, Utah and Denver, Colorado.

\* \* \*

An illustrated talk on blister rust was given by R. L. MacLeod on March 12 before the Twentieth Century Mothers Club at Spokane, Wash.

\* \* \*

S. N. Wyckoff spent the period February 24 to March 4 in California where he attended the District 5 Investigative Meeting and checked over the results of the chemical eradication investigative program.

\* \* \*

A meeting of the Northern Rocky Mountain Section of the Society of American Foresters was held in Spokane on March 11. Several members of this office attended to hear a paper on and discussion of the yield tax.









W E S T E R N   B L I S T E R   R U S T  
N E W S   L E T T E R

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Confidential  
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U. S. Department of Agriculture  
Bureau of Plant Industry  
Western Office of Blister Rust Control  
Spokane, Washington



## A PROBLEM IN BLISTER RUST ECONOMICS

C. C. Strong

The supervisor of a Ribes eradication project must cope with many and varied forms of perplexing problems. These problems may range from quietly exhorting the most energetic (at meal time only) "Ribes hound" to ease up at the festive board or fervently appealing to Jupiter for copious moisture after seeing the crew for 40 days and 40 nights on the business end of "hodags" along a fire trench.

One problem which made its appearance early in the program of developing a practical method of securing adequate control of white pine blister rust in the Inland Empire was that of minimizing losses due to time loss by injury, sickness, rain and fire fighting. The loss, of course, comes from subsistence furnished while men are not gainfully employed, expense to the compensation commission in cases of other than minor injuries, disruption of plans for the promoting of the season's work and in not fully utilizing the maximum overhead which must be supplied for the job.

Because this situation was confronted so early, remedial measures were instituted long enough ago that at the present time an analysis of the results of those measures shows the material value of such procedure. Table No. 1 shows the results of the time lost in relation to the time gainfully employed for the period 1924 to 1928 inclusive, omitting figures for 1926. 1926 was not considered in Table No. 1 because 53% of the time of every man was spent fire fighting and the overhead was largely assumed by the Forest Service for fire fighting purposes. It was therefore not a normal year from the standpoint of blister rust control.

TABLE NO. 1

Year	Normal Working Days Charged to									
	Sickness and Injury		Fire Fighting		Rain		Gainfully Employed		Total	
	Man Days	% of Total	Man Days	% of Total	Man Days	% of Total	Man Days	% of Total	Man Days	% of Total
1924	82.00	2.40	143.250	4.08	376.75	10.92	2857.250	82.60	3459.25	100
1925	54.50	1.50	776.175	21.31	34.00	0.94	2777.625	76.25	3642.30	100
1927	64.25	0.87	14.000	0.20	644.25	8.68	6701.250	90.25	7423.75	100
1928	77.75	1.76	12.000	0.27	253.00	5.77	4082.750	92.20	4427.50	100
Total	278.50		945.425		1310.00		16418.875		18952.80	
Average		1.47		4.99		6.91		86.63		100

It will be noted that slight progress in eliminating sickness and injury has been made since 1924. In 1927 and 1928 practically no time was lost due to fire fighting. This is accounted for largely by the fact that there were few fires in the general regions where men were employed. However,

efficiency in getting these few fires under control before they reached the dangerous stage is a contributing factor. Loss of time due to rain is the only factor which cannot be controlled. Heavy rains in the late summer of 1927 resulted in quite heavy losses. These losses were kept at a minimum by having men work on cut-over and burned-over areas immediately following rains where brush dried off quickly. Heavy rains occurred in the first three weeks of the 1928 season which would have resulted in very heavy losses had not men voluntarily worked on several Sundays and holidays thereafter to reduce the overhead loss and reimburse themselves since they were paid wages only for days during which work was performed.

Because of the factors mentioned in the preceding paragraph it is still impossible to get a proper conception of the losses accruing from the factors mentioned in Table No. 1. Therefore it becomes necessary to show in actual dollars and cents such losses to the Government. This is done in Table No. 2. Throwing all the loss as an average per day charge against each man day gainfully employed as shown in Table No. 1, gives the true picture of the results attained by efforts toward minimizing the final losses sustained.

TABLE NO. 2

Year	Total Loss on Account of Lost Time	Total Man Days Gainfully Employed	Average Loss Charged Against Each Man Day Gainfully Employed
1924	\$2,874.00	2,857.250	\$1.01
1925	1,665.25	2,777.625	0.60
1927	2,136.15	6,701.250	0.32
1928	1,050.75	4,082.750	0.26

Basis for Computing Above Losses.

The following statement shows items contributing to the losses sustained when work was not performed on normal working days because of:

1. Rain - subsistence and proportionate share of overhead.
2. Sickness - " " " " " "
3. Fire - proportionate share of overhead.
4. Injury - subsistence and proportionate share of overhead.

DIRECTORS OF CHEMICAL ERADICATION SIGN CONTRACT  
WITH NEW STAR.

The management at Berkeley takes particular pleasure in announcing the signing of a new feminine star to take the leading role in the classic epic drama of the Idaho hills, "The Chemical Eradication of Ribes". No



effort has been spared to train the new heroine for her part, and it is confidently asserted that her complex temperament will be equal to the demands made by the difficult role. Critics generally have found it a point in her favor that she lacks the extremely volatile character of the former star Miss Kloreight. While the new leading woman, whose identity is still a popular mystery, was engaged at some additional expense, the management is confident that results at the end of the summer will justify the outlay.

Those in a position to know are enthusiastic about her very competent work as seen in rehearsal. She attains great heights in the ever thrilling scene of the first act where R. petiolare comes completely under her sway and dies of her fatal spell. But her real powers are not seen until the second act where she meets the two henchmen of R. petiolare, and by exercise of her charm and clinging lure, brings them to destruction. It is in these scenes, in the conquest of G. inermis and R. lacustre, that she is shown at her best, and her abilities here strengthen the drama immensely for, as will be remembered, this part of the play was always a little too heavy for the somewhat ingenué charms of Miss Kloreight. The management does not feel too sanguine in predicting that the presentation this summer, especially in those scenes where the government forces enter the gripping conflict to save the crown jewels of the Inland Empire, will eclipse all previous records.

The youthful star granting an exclusive interview to this journal, announced with an enigmatic smile that she cherished a decided dislike for mutton in any form, and expressed a fear that this dislike may become active when she goes on location. The directors feel that the whim should be looked upon as a commendable virtue in view of the well known indigestibility of mutton and are prepared to give her full indulgence in this respect.

The signing of the new star is not without some real heart interest; she blushingly admitted that one of the directors, Mr. Van Atta, had been particularly thoughtful while drawing up her contract and the lady hinted that the directors confidence would not go unrewarded.

#### PROTECTIVE ERADICATION AT SAVENAC NURSERY

##### FAUCAN, MONTANA

(Taken from Annual Report of C.H. Johnson)

The purpose of the eradication work at the Savenac Nursery was to provide protection to a large crop of white pine seedlings, numbering about 3,000,000, which are raised annually and distributed as planting stock over the forests of the Northwest.

A fire occurring in 1910 destroyed all the standing timber in the immediate vicinity of the nursery. So severe was this fire that the ground cover was burned to the mineral soil thus destroying the Ribes seeds which may have lain dormant in the duff. The abundance of Ribes along the network

of streams which surrounds the nursery necessitated a program of stream type eradication mainly with the use of chemicals.

The cultivated portion of the nursery covers a narrow strip from north to south extending over four forties, or 160 acres. Sufficient protection to this small acreage required the eradication of stream type for two miles on Savenac Creek, two miles along the St. Regis River and for three-quarters of a mile on each of seven minor drainages.

Of the 476.8 acres eradicated during the season 1928, 269.4 acres were done by hand pulling, 71.1 acres by power spraying and 136.3 acres by knapsack spraying.

The cost of this work is shown in the following table:

Method of Eradication	Acreage	Total Cost	Cost per Acre
Hand	269.4	\$3,640.46	\$13.513
Chemical	207.4	6,031.77	29.082
Totals and Average	476.8	\$9,672.23	\$20.285

#### WORK ON NEWMAN LAKE STUDY PLOT

H. N. Putnam

There is in process the establishment of a permanent plot at Newman Lake, Washington, for the purpose of studying the spread of the rust from Ribes to pines.

Analysis of the cankers previously found here show that infection probably originated in 1923. This spring dozens of first symptoms of blister rust have been found on the pines. These consist of small, round discolorations  $\frac{1}{4}$ " to  $\frac{1}{2}$ " in diameter around the needles thru which infection entered. These first symptoms evidently resulted from Ribes infection in 1927, and constitute the second major wave of infection.

The work contemplated at Newman Lake includes the plotting and numbering of all Ribes and pines on the area, and the destruction of Grossularia inermis. Ribes lacustre will be left. The cankers present will constitute a source of yearly inoculum to infect the R. lacustre. After two or three years it will be possible to start recording pine infections resulting from the R. lacustre alone.

This plot should give us a certain amount of data of comparative value between the spread of the rust from G. inermis to pines and from R.

lacustre to pines. As time goes on, data of definite value should be gained in regard to the specific range of infection from R. lacustre to pines. This information will have an important bearing on stream type eradication plans.

### RELATIVE EFFECTIVENESS OF SMALL CREWS ON VARIOUS ERADICATION CLASSES

W. G. Guernsey

In making an analysis of the daily crew foreman reports for 1928, some interesting facts were established. This information on a large area further substantiates the methods results on crew formation reported on in the 1928 annual report.

Results of the analysis can be found in Table No. 1 (next page). The method of classification on a basis of Ribes per acre proves more satisfactory than classification by timber types. Ribes per acre is the most important factor governing eradication costs.

Under the new eradication class designations a crew usually performs work in only one or two such classes during the day. The foreman figures up the number of Ribes pulled per man day and acreage covered and can easily place the area under the proper eradication class. This simplifies the work of a crew foreman resulting in more accurate and dependable crew reports.

The graph on the next page gives a picture of the effectiveness of various sized crews in man days per acre for the several eradication classes.

The three man crew is most successful on the areas having fewer than 1,075 Ribes per acre. The three man crew is only surpassed by the four man crew at 1,075 Ribes per acre. Above this point the four man crew increases its efficiency by less loss of time in waste motion. There is also a psychological reason that with a fairly large acreage having a heavy concentration of Ribes the increased number of men on the job seems to stimulate the crew men to greater effort in finishing up.

There are insufficient data available on the five man crews to give an accurate average for all classes. In former years the five and six man crews have proven unsatisfactory, so increased attention was given to the smaller size crews. The 1927 report also proves the success of the smaller eradication crews.

Conclusions: The three man crew is very successful in operation on areas of less than 1,075 Ribes per acre. On heavy Ribes concentrations the four man crew meets with even greater success.

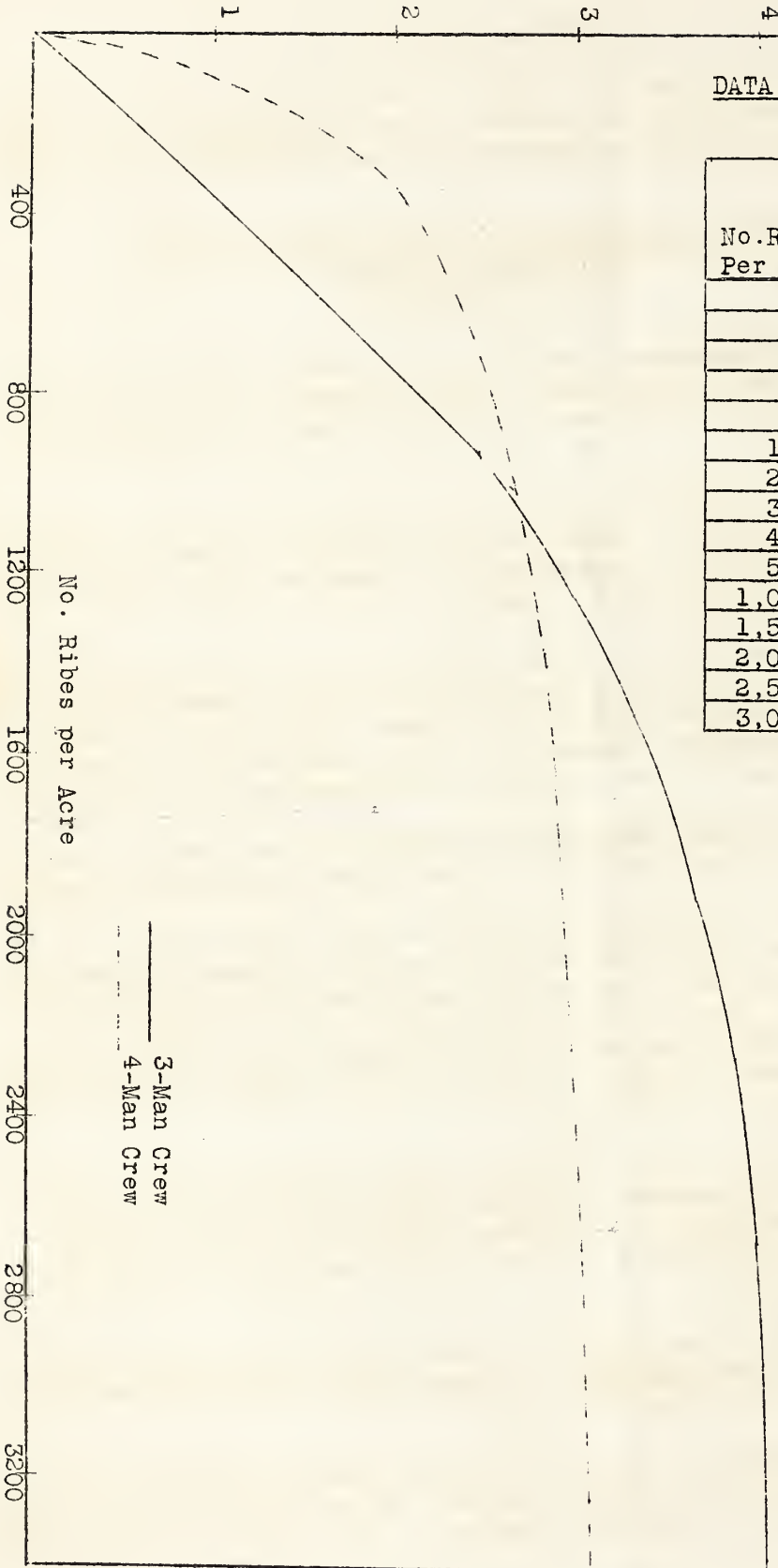
It will be necessary to try out the Ribes classification for the coming summer to establish it on a working basis. It is believed that it will prove very successful when the data are compiled in this manner on hand eradicated areas.



# No. Man Days Per Acre

TABLE NO.1  
DATA TAKEN FROM HARMONIZED  
GRAPHS

No. Ribes Per Acre	No. Man-Days Per Acre	
	3-Man Crew	4-Man Crew
10	.07	.10
20	.130	.17
40	.200	.27
60	.242	.32
80	.253	.35
100	.260	.37
200	.600	1.60
300	.900	1.87
400	1.150	2.10
500	1.400	2.25
1,000	2.550	2.70
1,500	3.350	2.86
2,000	3.720	2.99
2,500	3.900	3.40
3,000	4.080	3.10



## KNOW YOUR REGULATIONS

Roy Calhoun

A number of persons have asked for an interpretation of several items of the new standardized travel regulations. The following comments on the various paragraphs are made to explain most of the points of the new regulations that are at variance with the former regulations.

Paragraph 12--Our authority to operate personally-owned automobiles is contained in the annual appropriation act, and is not covered in the travel regulations. Therefore, paragraph 12 does not apply in the case of personally-owned automobiles.

Paragraph 47-a--The deduction of one-fifth per diem for each meal and lodging where employee is furnished meal or lodging by government agency is correct. This, of course, will amount to only four-fifths of the per diem allowance, but this leaves one-fifth to take care of the tips, laundry, etc.

Paragraph 58--There is no limit to the allowance for laundry, cleaning and pressing for employees traveling in British Columbia, except that subsistence must be kept within the daily subsistence allowance. However, administrative officers should see that this matter is not abused.

Paragraph 70--There are no messages in our work which should be endorsed "Official Business - Commercial rate - Paid". This applied to some of the departments where confidential messages require sending at commercial rate. Our telegram messages should be endorsed "Government Rate" even though the operator charges the full commercial rate. If so endorsed, the department can take the matter up with the telegraph company for a refund, if more than the regular government rate is charged.

Paragraph 95-x--This seems to be a case in which the Travel Regulations are a little off, as a duplicate receipt for gasoline tax is still required.

Paragraph 106--The Department does not require duplicate copies of the expense vouchers, so no change in our former practice is necessary in this matter.

Paragraph 110--No attestation is necessary for resubmitted items.

## NOTES

Miss Martha J. Preitkis was appointed as agent in Mr. Root's office on April 1, 1929 to take the place of Mrs. Esther Buchman, who resigned March 20.

\* \* \*

Mrs. Myrtle S. Brierley, stenographer in Mr. Goodding's office, resigned March 14.









W E S T E R N   B L I S T E R   R U S TN E W S   L E T T E R

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Confidential  
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U. S. Department of Agriculture  
Bureau of Plant Industry  
Western Office of Blister Rust Control  
Spokane, Washington



## IMPRESSIONS OF EASTERN BLISTER RUST CONDITIONS

S. N. Wyckoff

The opportunity to inspect blister rust and forestry conditions in New England and New York is very much worth while to any member of our western force. So far as the rust is concerned it is highly illuminating to observe its effect where it has been present over large areas for a considerable number of years.

In viewing these conditions and in properly evaluating them, one must constantly keep in mind the history of the disease in this region. It must be remembered that in many places local control followed the advent of the rust. This has resulted in the general appearance of pine infection, the results of which are apparent according to the severity of the infection and the time at which local control has been applied.

It is immediately apparent that the severity of pine infection is directly related to the Ribes population of each particular locality. It would seem almost possible to compile a fairly good Ribes map of this region from pine infection data alone. Certain parts of New England showed very spotty pine infection. This infection might be locally quite serious but did not extend over very large areas. We were told that in such localities the Ribes had not been originally very numerous and those which were present were fairly well concentrated in local areas. Very brief inspection of places within these localities where Ribes had not been eradicated showed this to be the case. In other parts of the general region pine infection was more uniform in extent and more uniformly heavy. This was where Ribes were generally numerous.

The three principal impressions to be gained by an inspection of blister rust conditions in the northeastern states are: 1, the extreme severity of pine damage where the rust is not controlled, 2, the efficacy of local control as it is practiced in this region, and 3, the ability of a young stand of eastern white pine to efface the results of heavy damage after local control has been applied.

If anyone imagines that blister rust cannot severely damage white pine of merchantable size I would recommend a few hours spent on the Waterford area. This area contains a stand of what was originally good saw timber. It was subjected to infection from a block of cultivated black currants approximately a fourth of a mile away and from wild gooseberries, growing at the rate of 10 per acre, in close proximity to the pine stand. This stand will probably suffer a seventy-five to eighty per cent loss in trees of merchantable size by the end of the next few years.

The other side of this rather dark picture is to see the vigorous young stands of healthy white pine in areas where local control has been practiced. In this connection I should like to express my healthy respect

for the high type of eradication work done by our eastern brethren. Where Ribes eradication has been done by properly qualified men the work is of an extremely high type.

In young reproduction stands which have previously been subjected to infection but which have later been protected, the results of the infection were not apparent after a number of years. The infected trees died, were naturally or artificially removed, and their place immediately taken by new reproduction. This also is frequently the case with older stands. The most striking effect of the long standing blister rust infection at Kittery Point, Maine, now consists of several wood piles - the last remaining vestige of large pines which had been killed by the rust and were being utilized by the owners for fire wood.

#### BORDER QUARANTINE STATIONS ON CALIFORNIA-OREGON LINE

G. A. Root

The finding of the Mediterranean fruit fly in Florida has given an added impetus to quarantine activities in California. Additional funds have been provided so that two inspection stations will be established on the California-Oregon border on May 1, one at Crescent City on the Redwood highway and the other at Hornbrook on the Pacific highway. These will take care of automobile traffic coming in from the north and be primarily on the lookout for Florida citrus or other fruits which might carry the Mediterranean fruit fly. Other contraband material, which might enter contrary to Federal or State quarantines will be intercepted including blister rust hosts. These stations will be provided with posters and literature on the blister rust. There is reason to believe that these stations will intercept the red flowering currant, Ribes sanguineum, especially in the spring when they are in bloom. It is well known that tourists particularly, are prone to cut the flowered stems and transport them for long distances. These two stations are the forerunners of several more which are contemplated for the Oregon line at points farther east.

#### WHO'S THE DOCTOR?

Roy Calhoun

In order to take precautions to prevent employees injured on official work from being treated by other than government or designated physicians, you should take such steps as necessary to call the regulations to the attention of the men.

Call your men together upon arrival at camp and advise them or post instructions on the bulletin board.

In cases where the only practicable procedure is to get treatment from a non-designated physician, transfer the case to a designated physician as soon as possible.



## THE TOXICITY OF CYANIDE COMPOUNDS

H. R. Offord

Whenever the lapse of time between cause and effect is relatively short, the human mind with characteristic frailty, illogicality and no little pride in its astuteness seizes upon the cause with avidity and clings tenaciously to an over-exaggerated conception of its importance. Such peculiarities of the species *Homo sapiens* are exemplified by the popular fear and horror of cyanide poisoning, a fear which has been accentuated no doubt by the Machiavellian activities of lady poisoners and the recent popularization of tenebrous mystery stories. The lay mind on the subject of cyanide poisoning is succinctly expressed by the old chestnut that "one drop on a dog's tongue will kill ten men", and a mass of scientific data is having a difficult time making headway against this old established bit of folk lore. The classic rebuttal concerning the alleged "always fatal" cyanide gas was made by an English toxicologist who shut himself and a healthy dog in a sealed glass chamber containing a concentration of cyanide gas lethal to lower animals. Following the demise of the dog the man walked out of the room unharmed.

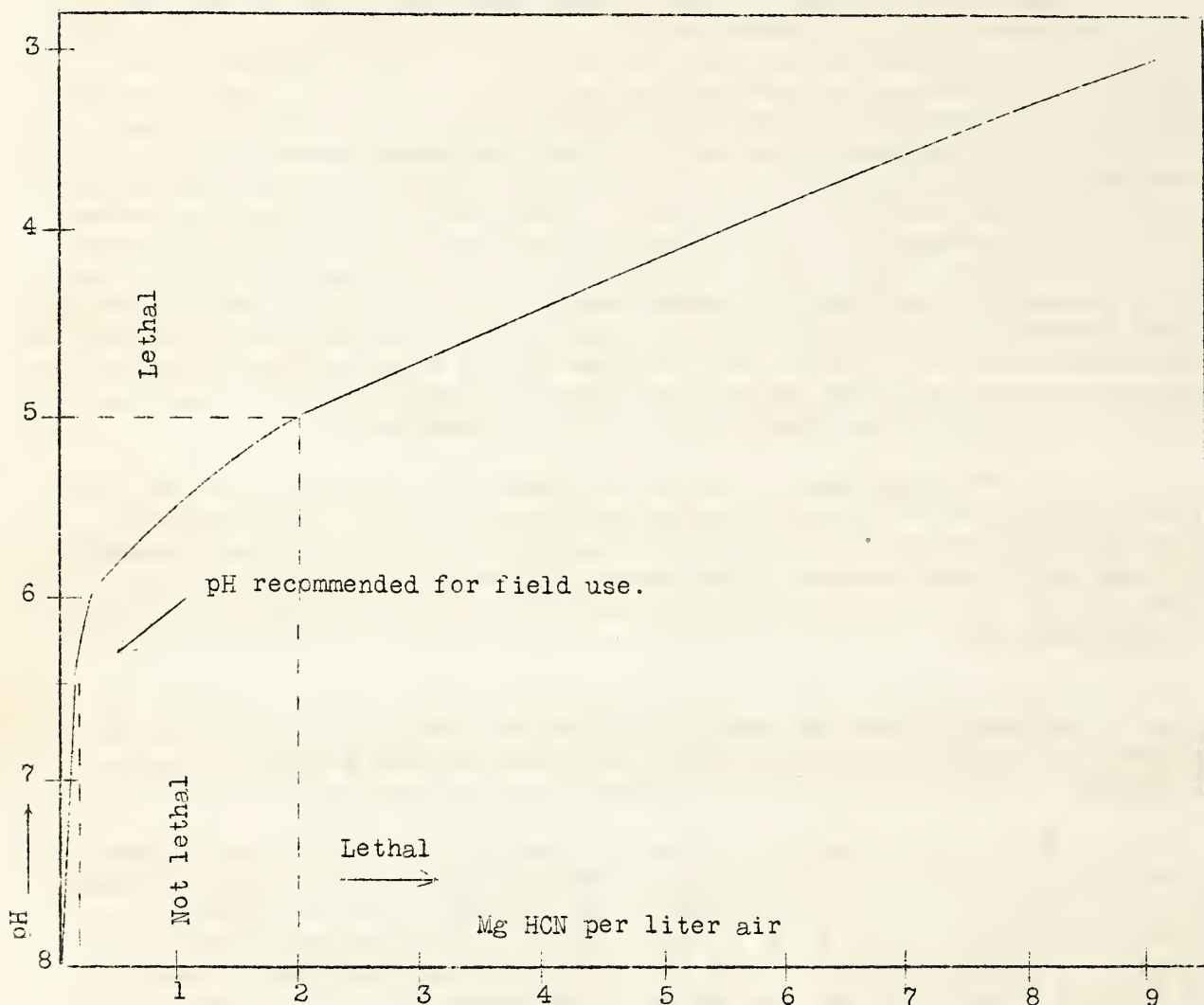
On the other hand, chlorine gas basks in the approval of the multitude largely due to the muchly advertised chlorine bombs for combating colds, in spite of the fact that the lethal dose of chlorine is approximately the same as hydrogen cyanide. The longer time interval between cause and effect in the case of chlorine gas has lulled a gullible public into a state of false security.

The suggested use of a copper cyanide complex as a Ribicide has caused a paroxysm of fear to sweep thru those who are interested in the development of Ribicides and has caused the writer to make a special study of the amount of HCN which could be liberated from the complex.

Since it is desirable to use M/4 solution of the copper complex in neutral or slightly acid solutions, a series of experiments was performed by R. P. d'Urbal to determine the amount of HCN that would be liberated in adjusting the spray to pH 3, 5, 6, and 7 to 11. The method used was as follows: A measured volume of air ( $\text{CO}_2$  free) was aspirated thru a liter of M/4 complex adjusted to the desired pH, colorimetrically. The liberated air was absorbed in 2N NaOH and the NaCN determined by the silver nitrate method. In each case 11.6 liters of air was aspirated thru, in from 2-3 hours. The accompanying graph, Figure 1, shows the results of these experiments. The lethal dose has been taken as 2 mg. per liter of air, a figure for lethal dose which has been taken from the literature on experiments dealing with cats and dogs. In view of the glass chamber experiment described above, we could safely assume that the lethal dose for man would be considerably higher than 2 mg. per liter of air. It is evident from the graph that the spray could be safely adjusted to a pH of 5.5 and there should be no shadow of doubt concerning the safety of the spray in the pH of 6.5 recommended for field use. Moreover, in the experiment performed, a small amount of the complex was aspirated over a period of several hours and every atom of HCN absorbed in a chemical reagent. Under field conditions only a small fraction of the available HCN would be liberated owing to the extreme solubility of HCN in

FIGURE NO. 1

HCN CONTENT OF AIR DRAWN THRU 1 LITER OF M/4 COMPLEX AT VARIOUS pH



water and, in addition, the large volume and free circulation of air under field conditions would render the trace of liberated HCN negligible. It should also be kept in mind that repeated sub-lethal doses of HCN are not harmful.

In view of the fact that the complex contains ten parts  $\text{Na}_2\text{S}_2\text{O}_3$ , one of the best known prophylactics for cyanides, to one part of copper, no injurious effects to exposed skin should attend the use of the complex. The fact that copper itself can be taken into the system over fairly long periods in quantities up to 0.5 grams per day without ill effects, is well established. Small amounts of cyanide even if taken into the respiratory system in the form of a fine mist spray are rapidly changed over into the thiocyanate and quickly eliminated.

Aside from the slightly mauseous taste of the copper which is entirely eliminated by using refuse molasses as a sticker and binder the writer sees no personal danger involved in the large scale application of the spray.

## INSPECTION OF CHEMICAL ERADICATION AREAS

C. C. Strong

The areas sprayed in 1927 at Clarkia and in 1928 near Bovill, Idaho were examined on May 1 and 2 by Putnam and Strong. At that time several important facts were noted regarding the apparent permanent effectiveness of the original eradication job. These are as follows:

1. A considerable number of R. petiolare seedlings of 1928 origin were found on plots sprayed in 1927.
2. Grossularia inermis plants not killed by being sprayed in 1927 showed complete recovery.
3. A few G. inermis bushes were completely killed by 1927 spraying.
4. Practically 100% of R. petiolare sprayed with sodium chlorate in 1927 had been killed.
5. None of the various sprays used at Bovill and Clarkia in 1927 and 1928 proved very effective in killing G. inermis and R. lacustre bushes.
6. All of the sprays in which sodium chlorate was the principal agent resulted in practically 100% kills on R. petiolare.
7. On areas where work was rushed (during the experimental period at the end of the 1928 season) and 10% sodium chlorate spray used, results were equally as good on all Ribes species as were results of any other spraying job done in 1928 including areas covered with 25% sodium chlorate sprays.

## SIGNS OF ACTIVITY IN OREGON

Goodding started his field work in Oregon during the month of April scouting for blister rust in the Rhododendron and Mt. Hood regions, studying the infection area at Rhododendron, making a pre-eradication study in the Metolius River region and in the Peavy Arboretum.

In the pre-eradication studies and in the work on the infection area at Rhododendron, he was assisted by H. N. Putnam. They also scouted for infection in the Wind River and Guler regions in Washington. Several good associations of pines and Ribes bracteosum were found but no infection was located. Of special interest is their tally of cankers in the Rhododendron region where 60 incipients of 1927 origin were counted on one small pine.

Observations were made also on a heavy infection of Cronartium filamentosum on Pinus contorta on the Mt. Hood Loop road, on a similar infection of apparently the same disease on yellow pine on the road from White Salmon to Guler and on Gymnosporangium Blasdaleanum on Libocedrus decurrens



on the Metolius River. The work of the Cronartium on the lodgepole in the section referred to resembles closely a heavy attack of white pine blister rust. The damage to yellow pine on the Guler road was also severe. The Gymnosporangium causes large witches brooms in the incense cedar and often causes death of the very young trees.

#### EXPERIMENTAL PLOT AT NEWMAN LAKE

A plot to study the infecting power of Ribes lacustre was laid out during April in the Newman Lake infection area. A large area was surveyed and the pines and Ribes plotted. During the course of this work several infected trees, which had not hitherto been discovered, were located.

Following this general survey all available men in the office were shanghaied for the eradication of Grossularia inermis. Twenty-six acres of stream and swamp type were eradicated in two and one-half days. Approximately twenty-three and one-half miles of G. inermis live stem were pulled.

With the removal of G. inermis from this area any pine infection showing up during or later than 1931 may be ascribed to the infecting power of R. lacustre and the extent of damage from this species may be noted.

#### RUST DEVELOPMENT IN THE COAST REGION.

The backward spring of 1929 is well shown in the development of blister rust on Paschall's Ranch near Bremerton, Washington. Mr. Paschall, who is very much interested in blister rust, makes almost daily observations on the progress of the disease each year.

In 1928 the first aecial spores were liberated on March 19 and the uredinial stage was observed on May 11. In 1929 aecial spores started shooting on April 7 and the first uredinia were observed on May 22 when a light but unmistakable infection showed on Ribes bracteosum, R. lacustre and R. sanguineum.

#### EDUCATIONAL DISPLAY AT SPORTSMEN'S AND TOURISTS' FAIR

During the week of May 13-18 a blister rust display was shown at the Sportsmen's and Tourists' Fair in Spokane, Washington. Specimens of the disease, demonstration boxes showing its development and life cycle and enlarged photographs of the disease and of white pine stands were shown, supplemented by lantern slides with suitable legends telling the story of blister rust and its control. Several white pine trees and specimens of R. oetiolare and G. inermis were placed in the booth.

The lantern slides proved especially effective in drawing the

interest of the crowd. The life cycle of the disease, its spread and the fact that it attacks only white pines proved of interest to a great many people. The importance and practicability of control methods were also stressed by the blister rusters in attendance.

It was noticeable that an increasing number of the general public have heard and read something of blister rust. However it will keep our scouts on the go to discover as much blister rust infection as has been observed by the public in the Inland Empire.

#### WHERE DO YOU LIVE AND WHAT IS YOUR PHONE NUMBER?

Roy Calhoun

That really is not a long word but it takes a long time to get everyone accustomed to give the information to keep our address files up-to-date.

Many of you have personal calls as well as official which make it necessary to get in touch with you out of office hours. The telephone and directory officials often ask us for this information which should be furnished promptly.

As soon as you have read the above question kindly give us the answer whether you live in Spokane or elsewhere.

#### NOTES

Benedict, Harris and Miller left the Spokane Office on May 1 for California to prepare for and initiate their field work.

\* \* \*

Several blister rust talks supplemented by lantern slides were given during April by Root before the biology classes of the Polytechnic High School at Long Beach, California. The motion picture film was also shown to these classes.

\* \* \*

Goodding has located heavy infection on white pine near the mouth of Still Creek, Mt. Hood National Forest, Oregon. While he has not had time for a complete inspection, he believes that almost 100% of the pines are infected for 100 yards back from the stream. Many of the trees have four or five fruiting cankers.

\* \* \*

Offord, Root and Van Atta spent two days at Watsonville, Calif., spraying several hundred cultivated currants of three species; the English black currant, the common garden red currant and the yellow flowering currant. Three different toxic sprays were used and results are awaited with much interest.

\* \* \*

H. R. Offord arrived in the Spokane Office on May 14 to prepare for experimental work in Idaho.









W E S T E R N   B L I S T E R   R U S TN E W S   L E T T E R

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Confidential  
\*   \*   \*

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U. S. Department of Agriculture  
Bureau of Plant Industry  
Western Office of Blister Rust Control  
Spokane, Washington



RIBES ERADICATION IN NORTH IDAHO - APPLICATION  
AND EXPERIMENT.

During the current season the large scale eradication work will take place on the lands of the Clearwater and Potlatch Timber Protective Associations. The work will consist mainly of knapsack spraying and will be financed on a cooperative basis, each Association supplying funds to be applied to this project.

On the Potlatch Timber Protective Association, W. G. Guernsey will have one 26-man camp on Gold Creek, east of Elk River, Idaho, and one 26-man camp on the East Fork of Potlatch Creek near Bovill, Idaho.

On the holdings of the Clearwater Timber Protective Association there will be two camps of 26 men each on Reed's Creek in the general vicinity of Headquarters, Idaho, under the supervision of B. A. Anderson.

In addition to the eradication work outlined above, camps will be established for re-eradication and methods studies and experiments in the application of chemicals. M. C. Riley will supervise this work.

The methods studies will again be directed by H. E. Swanson, who will have a 15-man camp on Musselshell Creek near Musselshell Ranger Station. Extensive experiments with methods of power spraying and some comparative work with knapsack spraying will be carried on.

The re-eradication of hand pulled areas will take place near Honeysuckle Ranger Station on the Coeur d'Alene National Forest where C. O. Peterson will establish a 15-man camp.

Re-eradication of the chemically eradicated area will be carried on by H. F. Geil. He will have a 7-man camp on the 1928 eradication area on the East Fork of Potlatch Creek near Bovill, Idaho.

Extensive experiments in the application of chemicals will be carried on at Clarkia, Idaho, where Frank Walters will have a 5-man camp. The purpose of this work is to determine the seasonal effect of chlorate spray in various concentrations with several pH values and with different hygroscopic agents. These variations will give a series of fifteen experiments which will be repeated every fifteen days during the summer and should yield definite data on the seasonal effect of the chlorate on Ribes.

The men are reporting for duty on the Association work from June 17 to 24 so that this work should be in full swing by July 1. The other projects will get under way on July 1. All work of the eradication project will be as usual under the general supervision of C. C. Strong.

## 1929 ERADICATION AREA IN CALIFORNIA

W. V. Benedict

Eradication work in California will be carried on in two camps on the Plumas National Forest. One camp of 23 men will be located on Meadow Valley Creek with D. R. Miller in charge. The other camp of 17 men will be located on Rock Creek with E. L. Baxter as camp boss.

The purpose of the California eradication project is to further study the local control problems in the sugar pine belt. During the past three years we have directed our experiments in the optimum regions of sugar pine growth, as represented by the Stanislaus Forest. This year we have jumped north to the Plumas Forest where the sugar pine is of more average quality. The Meadow Valley area contains good, average and poor sugar pine type for this section of the sugar pine belt.

Three species of *Ribes* occur on the prospective eradication area. *Grossularia inermis* is especially numerous in patches along the more sluggish streams and on the borders of swamps. *G. roezli* is scattered throughout the whole area and firmly anchored in bedrock. New picks have been procured to aid in removing this species. *Ribes nevadense*, the third member of the *Ribes* tribe, while still second to *G. roezli* in abundance, is much more numerous than on any area hitherto worked. Bedrock also seems to be the selected home of the Sierra Currant.

It is planned to apply a mixture of 2 parts of sodium chlorate and one part of potassium chloride in dry form to the exposed crowns of rock bound *Ribes*. H. R. Offord is responsible for this idea and on his shoulders rests the responsibility of destroying all bushes which do not succumb to this treatment.

Some of the *G. inermis* patches are to receive varying doses of complex compounds to be administered under the direction of R. P. d'Urbal sometime during July.

Benny writes: "Camps are to open June 19 - if the Lord is willing (and Calhoun doesn't clip my allotment again). Our good old truck is mired in the mud to the scuppers and old Jupe showing signs of wetting her down to the riding lights. The nearest we have been able to get to one camp site in over a week is 4 miles - and then you bounce me for a report on the opening date. (Quite opportune, don't you think? - Editor)

## PINE SCOUTING IN OREGON

Further scouting in Oregon has revealed the presence of pine infection on Herman Creek, Hood River County which is of interest. Goodding confidently expected that rust would be found there on pines in 1928 but the inspection work was meager due to a lack of time. This year out of a



total of seven trees inspected, five were found to be infected.

One small tree had 53 cankers, five of which were fruiting, one for the second time. Two branches had 7 cankers each and in several places incipient cankers were coalescing. A second tree nearby, closer to Ribes bracteosum had very few cankers. One, however, had evidently fruited for the third time on 1923 wood. Many of the limbs of this tree were damaged by Scleroderris.

Goodding also reports finding an interesting Scleroderris on Abies amabilis and a striking canker disease on alder, not yet determined. A very unusual saprophyte or possibly a weak parasite, on R. bracteosum found on Still Creek, proved to be a Scleroderris, possibly Scleroderris ribesia. Both the perfect and imperfect stages were found in excellent condition.

#### RUST DEVELOPMENT - 1928 AND 1929

An interesting fact with regard to rust development on the Coast is that while the development of the aecial and uredinial stages is much later in 1929 than in 1928 the telial stage was first observed on the same date this year as last.

In 1928, at Bremerton, Washington, aecia were liberated on March 13, in 1929 on April 7; the first uredinia were found on May 11 in 1928, May 22 in 1929; the first pycnia on May 30 last year while this year it had not appeared on June 7 and the first telia were observed on June 7 both in 1928 and 1929.

Infection on Ribes is heavy this year at Bremerton and much more advanced than at Cheekye, B. C. At Cheekye the uredinial stage was just beginning to show on R. bracteosum and was very light on R. nigrum, on June 6.

#### BLISTER RUST ACTIVITIES IN MONTANA

C. H. Johnson

The chief operation in Montana this summer will consist of re-eradication at Savenac Nursery.

An examination made about the middle of May disclosed a better than 90% kill on R. petiolare, but the effect of the chemical on G. inermis was not so good.

A crew of 6 men will commence re-eradication on Savenac Creek as it is highly important that the last evidence of Ribes be removed from the immediate vicinity of the Nursery.

At the end of the current season it is anticipated that Ribes eradication will have reached that stage whereby any aeciospores traveling in the vicinity of the Nursery will fall on barren soil.

## NOTES FROM OREGON

L. N. Goodding

It was once a joke in Oregon to talk about rain. This summer, it is practically suicide to kid an Oregonian about the weather. Rain has worn his nerves to frazzles. He already speaks about the early fall and wonders how he will build fires with wet wood this winter. Blister Rusters paddle in the mud and poison ivy. Even their damns are water logged. An urgent request has been forwarded to "Brick" to come and cuss for them. Don't worry boys, tomorrow the sun may be shining, - for five minutes in the morning.

Editor: Don't they teach the English language in Oregon?

---

Oregon work planned for this season is very limited. The time was when a report of pine infection in any locality created some stir, but Oregon at present has so much of it that all possible funds are being used to protect Los Angeles. Oregon gestures are being made by four men on the Peavy Arboretum north of Corvallis, where the Ribes are being pulled to make room for more poison ivy. Two others are checking last year's job at the Wind River Nursery in Washington which Oregon has temporarily annexed. A total of six Ribes hounds and a cook will be at Still Creek after July 1. What scouting is done for blister rust will be accomplished or attempted by Goodding. Thanks to a limited program and mighty reliable Ribes hounds little bossing will be necessary. A half-time secretary will attempt to circularize the Forest Service, the State Forestry Department, the Extension Service, the State Horticultural organization, the high schools, the Indian Service and the National Parks. It is hoped that sufficient demand for exhibit material can be made that all blister rust will be put in pickle and thus a national problem solved. (Don't carry this too far "Brick". Remember Hoover insists on a job for every man.) Goodding wishes to have the mouth of Still Creek set aside as a national Blister Rust Monument. In case this is done, considerable time will be spent in tacking slogans to martyred trees, "If you must go to Europe, bathe in Lysol and throw your clothes in the ocean before you return", "When this tree dies, its place will be taken by a Douglas Fir, if Larch Canker doesn't get it", "This is Blister Rust; if you see it in California wire collect, George Root, State Department of Agriculture, Sacramento, California", etc., etc.

---

Goodding is making a collection of Ribes wood specimens and wishes exchanges. Pieces of large stems and crowns about six inches long should be excellent for exhibits. When you fall exceptionally large ones, don't fail to yell, "timber". Talk less about the big fellows and collect the evidence. Putnam's stories about big Ribes are the only ones reliable.

RIBES SURVEY ON WOODS AND MILL STUDY  
PLOTS, STANISLAUS NATIONAL FOREST

W. V. Benedict

The California Forest Experiment Station has inaugurated this spring a comprehensive study of woods and mill operations on the Pickering Lumber Company's sale area of the Stanislaus National Forest. The purpose of this study is primarily to establish a more definite correlation between the economic and silvicultural considerations involved in the management and utilization of timber stands in the California pine region.

Three contiguous 15 acre plots were established. Each plot will be cut according to a different practice, as follows:

Plot No. 1. To be marked, cut and logged in accordance with standard District 5 Forest Service timber sale practice.

Plot No. 2. To be cut and logged according to a heavy cutting system which will remove merchantable material of all species to a low diameter limit.

Plot No. 3. To be cut and logged in accordance with the practice recommended in an economic selective logging plan. This plan calls for the leaving of practically all fir and cedar and the leaving of pines below a diameter limit of 30 inches.

The woods area, within which the plots are located is on moderately sloping ground suitable for tractor logging. The timber type is chiefly sugar pine-fir with some yellow pine interspersed. The stand is all aged, about 80% mature and over-mature. It will cruise about 60 M. feet to the acre.

Manzanita, spiny Ceanothus and scrubby Shinquapin occur in considerable quantities on parts of the area where the timber stand has been opened by fire.

A Ribes survey of this area was made with a two-fold purpose: 1. To study the effect of different methods of cutting and logging on Ribes establishment; 2. to make a re-eradication check on an area three years after the original eradication.

The locations of all Ribes on each of the three plots were recorded so that they can be plotted on the detailed cover map being prepared by members of the California Forest Experiment Station, copies of which are to be furnished this office. Each Ribes bush was recorded by species and classified as missed bush, sprouted bush or seedling. The height and feet of live stem were taken and the Ribes carefully eradicated. A record was also made as to location and whether or not they were fruiting.

These same data were also taken on a strip two chains wide



around the outside of the three plots. Ribes on this strip were definitely located but not eradicated. The outside strip will be logged by the same method as the plot which it adjoins.

A permanent five-acre check plot was also established and Ribes data taken on the adjoining section where Ribes eradication work had not been conducted.

This area was eradicated in 1926 and re-eradication showed an average of 7.98 bushes per acre. Periodic checks of the plots after logging will be made to study the re-entry or establishment of Ribes.

#### CHEMICAL INVESTIGATION AT SANTA, IDAHO

A. S. Crafts who has been engaged on physiological studies of Ribes at Berkeley, California arrived in Spokane on May 20 and has started initial physiological studies at Santa, Idaho, where camp was established on May 21.

A portable drying oven has been set up and leaves and stems of R. lacustre, R. viscosissimum and G. inermis have been collected for carbohydrate and tannin determinations.

The purpose of the work at Santa is to study the entry into and movement within the Ribes plants of the chemicals being used in the chemical eradication project and to determine as far as possible the factors involved in the entry, rate of movement and extent of distribution of these chemicals.

A comprehensive plan of work has been outlined as follows:

1. A preliminary survey of normal and previously sprayed plants will be made to determine the type of injury and effects of chemicals upon the food reserves of the plants.

2. A complete set of samples will be taken of each of the four important species of the region covering the period from full flowering to autumn rest. These will be collected at 14-day intervals, moisture determinations made, the samples dried and stored for analysis.

3. A series of physiological experiments will be conducted which will determine the actual path of movement. Ringing, partial spraying, dyes and micro-chemical tests will be used in this work.

4. The spraying work being done at Clarkia will be closely watched and any indication of the rate of injury and path of movement of chemicals studied.

5. If certain preliminary work is substantiated and the destarching action of sodium chlorate proves important, some chemical work to study the nature of this action is contemplated.

OBSERVATIONS ON ERADICATION OF G. INERMIS  
FROM NEWMAN LAKE DAMAGE-TO-PINE PLOT  
H. N. Putnam

On May 6, 7 and 8, 1929, various members of the office eradicated G. inermis from the 46.8 acres comprising Newman Lake Plot. There were 24 man days used in pulling 121,404 feet of live stem of G. inermis. At this season of the year G. inermis was out in leaf in advance of the associated vegetation, a circumstance which aided materially in finding the bushes.

On May 27 and 28, 1929, the plot was gone over the second time for G. inermis. At this time 14 man days were used in finding and pulling 4,487 feet of live stem of G. inermis. Associated brush was well out in leaf, increasing the difficulty of finding the bushes.

At sundry times since the second eradication, a portion of the plot has again been gone over in connection with taking data on pines and Ribes. There have been 8.1 acres of the plot so covered, and 268 feet of live stem of G. inermis found on this third eradication.

Some rather interesting comparisons may be made from these figures.

Efficiency on entire plot of first eradication based on second eradication - 97.2%.

Efficiency on 8.1 acres of second eradication based on third eradication - 59.1%.

In considering the above two percentages, the significant point to be borne in mind is that in early May, when the first eradication was done, G. inermis was much more advanced in leafing than associated brush, thus easily detected and a high per cent of efficiency obtained. In the latter part of May the low per cent efficiency of the second eradication was due to the fact that associated brush species were well leafed out, making the detection of G. inermis difficult.

CRYSTALS IN RIBES LEAVES

Large calcium oxalate crystals are found in the spongy parenchyma in the leaves of R. viscosissimum, R. lacustre and R. petiolare in greenhouse specimens. The greenhouse materials of G. inermis showed that the crystals were in the palisade layer of the leaf. No crystals were found in the pickled specimens of R. petiolare and R. lacustre which were gathered in the field. It is likely that the diaphanol or the formalin acetic alcohol solution destroyed some of these crystals for they were found stored in the dormant bud which had been pickled in the same solution. The crystals could have been broken out of the cells by the knife in sectioning the leaves. The unfolded leaves in the winter dormant buds have many crystals stored in them. They are also present in large numbers at the base of these winter buds. The crystal occupies almost all of the space within the cell.



PRELIMINARY SURVEY OF RIBES CONDITIONS ON WHITE  
PINE AREAS OF GLACIER NATIONAL PARK

C. C. Strong

At the request of the National Park Service, representatives of the Office of Blister Rust Control recently made a preliminary survey of the known white pine stands of timber on Glacier National Park. The main purpose was to determine the Ribes conditions and secure an estimate of the cost of protecting white pine areas, in which the park officials were most interested, against possible invasion by blister rust. The survey was made in such a manner that the information secured will serve as pre-eradication data for the man who supervises the work of eradicating the Ribes, should it be done.

Apart from the blister rust control data, the survey revealed that the white pine bark beetle is doing heavy damage on the two areas where white pine exists in sufficient amounts to be of special value to the program of maintaining the natural timber growth in a healthy condition. It is doubtful that blister rust control would be practical unless bark beetle control is also instituted in the near future.

TIME ROLLS ON AND TIME'S FORGOTTEN

Roy Calhoun

Pity the poor temporary employee who has no one to report his time just because his supervisor forgot because he forgot, or forgot because the employee was transferred between pay days from some unknown supervisor to the man who forgot.

Put yourself in his place and imagine that you are short of mazuma -- which should not be difficult. Just imagine that the shortage is because someone forgot rather than because you have paid part of those bills.

CHEMISTRY ON AN INDUSTRIAL SCALE

Last week 2000 pounds of complex "Y" were manufactured by an industrial chemical crew consisting of Ganoung, Breakey and Offord. A 200 gallon steam-jacketed soap kettle, an intricate run-off system, a large sedimentation tank, two soap kettle scrapers, two large shovels and an Australian ice-axe comprised the chemical apparatus used by the strong back crew. No difficulties were encountered in translating laboratory data into the large scale operations. Our thanks are due to Mr. Irvine of the Western Soap Company and to his assistants in the plant for their splendid help during the course of the work.

WHOPPERS

By R. E. Myers

R. lacustre was observed on Gold Creek that made the writer wonder if Guernsey has Paul Bunyan in his crew, for bushes 12 feet tall with stems large enough to measure with calipers are not rare. The

roots seem to have grown in concrete. At least the writer was unable to shake one bush that he tried.

If Paul and his Blue Ox could be obtained some system might be devised whereby the stream type could be moved down to the Palouse country where there are no pines and the Ribes left to die of loneliness for their affinities, the white pines.

#### NOTES

Dr. E. P. Meinecke, Principal Pathologist, Office of Forest Pathology, San Francisco, visited the western blister rust control operations May 17-19 while en route from the East to San Francisco. Accompanied by S. N. Wyckoff, he inspected the experimental and investigative work on chemical eradication at Santa and Clarkia, Idaho.

\* \* \*

Dr. Carl C. Epling of the Botany Department, University of California, Los Angeles, arrived in the Spokane Office on June 19. He will spend six weeks in North Idaho completing the field work on his flora of the white pine belt of North Idaho.

\* \* \*

W. F. Painter's resignation took effect June 10. He expects to leave for the Coast and southern points when he takes delivery on his new Ford.

\* \* \*

Ribes data have been taken on a number of the plots at Santa, Idaho. The most interesting observation made to date is the relatively high susceptibility of R. viscosissimum to sodium chlorate, 20% and 25%. The chlorate is more effective than the chlorate-calcium chloride mixture on R. viscosissimum.

\* \* \*

Blister rust job turned down, evidently: Extract from letter - "I received your letter asking me to report for work with the Blister Rust Control at Bovill, Idaho, June 21 which I am not able to do without giving up my present position, which I am not likely to do."

\* \* \*

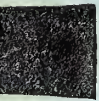
Extract from letter to Calhoun: "under the caption 'wheredoyouliveandwhatisyourphonenummer' in the Blister Rust News Letter, I would infer that you mean all members of the office. During the summer months I have no Berkeley address and my phone number is the same."

\* \* \*

The Ribes Rat says, "I see by the annual report that the checkers recommend a 'systematic method of random checking'. I suppose that means to go out on the area and then scatter in a heap."









Vol. 4

July 15, 1929

No. 7

W E S T E R N   B L I S T E R   R U S T

N E W S   L E T T E R

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Summer Issue No. 1  
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U. S. Department of Agriculture  
Bureau of Plant Industry  
Western Office of Blister Rust Control  
Spokane, Washington



## SPREAD AND DEVELOPMENT OF BLISTER RUST IN THE WEST

White pine blister rust was introduced into the West through an importation of nursery stock into Vancouver, B. C. from France in 1910. By 1917 it was established on the Upper Skagit River in the Mt. Baker region, on the Olympic Peninsula in western Washington and eastern British Columbia at Revelstoke, on the Columbia River. In 1920 it reached the pine at Spirit Lake in the Cascades of southern Washington and at Nelson in eastern British Columbia, about 35 miles north of the International Boundary. In 1923 pine infection occurred in Multnomah County of northwestern Oregon and at Newman Lake in Spokane County only three miles from the Idaho line; also on Deep Creek, near Elk River, Idaho (see page 64).

These dates tell the story of the actual establishment of the disease on pine. The presence of the rust on Ribes is usually the scouting crew's first indication of its invasion of new territory. Quite apart from the fact that the disease is much more difficult to locate on pine than on Ribes, it takes from 15 months to three years for the first symptoms to become visible on pine and from three to four years to reach the fruiting stage.

The pine infections at Newman Lake, Washington and in northwestern Oregon were located in 1928. An analysis of cankers at Newman Lake revealed the fact that the pine became infected in 1923. In Oregon, the pine infection in Multnomah County originated in 1923; two other infection centers in Clackamas County were apparently of 1925 origin.

Scouting in 1928 revealed the presence of the rust on Ribes over most of the northwest quarter of Oregon, half way down the State on the coast and within 50 miles of the northern limit of sugar pine in the Cascades. In the Inland Empire it was found over most of the white pine belt of north Idaho and in Lincoln County of northwestern Montana.

The invasion of new territory by blister rust goes through three general stages as follows:

1. Introduction. This stage represents the initial infection of Ribes usually from long distance spread. Infected Ribes infect the pines and new centers of pine infection are formed. Pine infections are not numerous and there is no actual damage to pine at this stage.

2. Intensification. After a few years the pine infections of the introductory stage begin to produce ascia, or Ribes infecting spores. At first the volume of spores is insufficient to cause further long distance spread of the disease, but the Ribes in the surrounding locality become well infected and each season increase the amount of infection on the pines. This results in the establishment of numerous local centers of severe pine infection,

3. Damage. Conditions are now favorable for an epidemic of the

disease in the locality. The annual infection of numerous Ribes causes very heavy pine infection. As time goes on, and these pines begin to die, the results of this heavy local infection in damage to pine become more and more striking. The time is also ripe, due to the production of large numbers of Ribes infecting spores on the pine, for a new wave of long distance infection on Ribes, thus starting new disease centers in other localities heretofore free from the rust.

At the present time the coast region of British Columbia has just reached the first phase of the damage stage. The Puget Sound region of Washington is in the intensification stage. In the Inland Empire and in northern Oregon we have the first or introduction stage.

In western British Columbia it has required from 10 to 15 years to go through the first two stages and enter the beginning of the damage stage. Apparently the same process will be accomplished in a somewhat shorter period on the coast of Washington, very likely due to a heavier initial Ribes infection. We have only the action of the rust in other localities upon which to base our judgment of its rate of development in the Inland Empire and in Oregon. While we are unable to predict the time necessary for the disease to reach the damage stage it seems reasonable to expect its course to be no more rapid than in the coastal region of Washington and British Columbia.

EXTRACTS FROM "INSECT AND DISEASE CONTROL AS A BRANCH OF  
FOREST PROTECTION".

Paper delivered at Yale University before the class in Forest Protection by  
S. B. Detwiler

Principal Pathologist in Charge, Office of Blister Rust Control

Practically all of the timber grown in America up to the present time has been nature's free gift, produced without man's aid. This condition has caused American foresters to be "wild-woods minded" rather than "crop minded". But there is evidence of a decided advance in forestry thought and practice. Forest exploitation is slowly giving way to conservative cutting. Better organization in forest fire suppression is developing recognition of the necessity for forest fire prevention. Forest protection is more intensively applied as the crop viewpoint becomes established in forestry. \* \* \*

Forest fire devastates more rapidly than forest pests and is a menace to animal and human life as well. Fire is always of emergency character, threatening complete forest destruction in restricted areas. Forest pests do not always create emergencies, but they are numerous and their robber activities go on continuously over vast areas. \* \* \* All crop producers soon learn that their greatest hazard is damage or destruction of their crops by pests. In this the producers of forest crops are no exception.

Whether fire or pest, forestry becomes impracticable without



systematic protective measures. \* \* \* Fires destroy quickly but not continuously; pests destroy slowly but operate throughout the growing season year after year. The cumulative losses from pests can exceed the losses from fire without the fact being realized, because insects and diseases work so extensively, steadily and insidiously. The actual facts can be ascertained only after careful surveys of damage are made, and this is very rarely done even on tracts under systematic forest management. \* \* \*

The soil produces plants and their products are basic to the life of man and animals. The systematic production of farm, fruit and forest crops is fundamental to civilization, industry and commerce. \* \* \* Protection to crops of the farm and orchard is given more readily than to forest crops because intensive methods that are practicable under tillage are seldom feasible on rough and often inaccessible forest land. Furthermore, the annual cash returns from an acre of cultivated crops is usually much greater than the annual cash return from an acre of forest crops. Application of intensive protective measures usually leaves a larger margin of profit on cultivated crops than would be obtained if such measures were not applied; whereas, in the forest, the normal margin of profit is so small that very definite limits are placed on the practicability of applying control measures.

Industry draws its supplies of raw materials from all parts of the world. As civilization becomes more complex, the distance and volume of crop movement increase and transportation is more rapid. These conditions favor the introduction of insects and diseases from one region, country or continent to another along with the plants and plant products moved. Each plant pest has its own restricted region of natural distribution and is further limited by the character of the food plants on which it can subsist. Modern transportation breaks down regional barriers, and thus new food plants become available. These new food plants are often better suited to introduced pests than the plants on which they lived in their homelands. There are still more than 5,000 species of dangerous insect pests and about 7,500 species of fungous enemies of plants which are known not to have reached America. \* \* \*

In general, plant pests from foreign countries, which become established here when climatic conditions and food plants are favorable to them, are more dangerous to American plants than insects and plant diseases native to this continent. In a state of nature unmodified by man the parasitic enemies of plant pests hold the pests in check, or the plants attacked become resistant to damage from their native pests through a long process of natural selection. When a plant pest is newly introduced into a region favorable to its development, its natural enemies are absent and its new food plants often are very susceptible to its attack. Thus the "balance of nature" is upset, and before it can be restored long years must pass. In the meantime, valuable plant species find difficulty in maintaining their existence; in extreme cases species become



extinct through the ravages of a pest.

Eradication of plant pests introduced into the United States has failed in most instances. Eradication measures, to be effective, must be prompt and drastic, and for this reason not only are costly but lack support from the public. Furthermore, to eradicate a pest its exact area of distribution must be known; otherwise it may be exterminated in one spot only to be found established elsewhere to such an extent that its eradication is an impractical proposition.

The only real, permanent protection against plant pests is based on exact scientific knowledge of all details concerning the life history, habits, habitat, food plants and enemies of the pest. Eradication or quarantine measures cannot be expected to be fully effective against any pest unless it is known how to detect it in all its stages, on what plants it may be found and where. Control measures also depend on this detailed knowledge since methods of combating the pest are developed through taking advantage of some peculiarity in its life or habits or through introduction of its natural enemies. \* \* \*

Investigation and experimentation require time and money; hence if a new pest spreads rapidly, control measures lag far behind the need for control. There is always a tendency to permit the need for speeding up control work to push aside the need for research and experimental work, thus slowing up actual accomplishment in control.\* \* \*

In pest warfare, extermination is seldom possible and the effort commonly is directed toward suppressing the invader to the point of minimum damage; or as Dr. E. P. Meinecke expresses it, "toward reducing the pest to the status of a tolerable nuisance". Common sense dictates that the economic law of diminishing returns applies in pest control application. The values preserved by the control work must exceed, or at least equal, the cost of such work if it is to be financially practicable. In some cases this will mean applying partially effective control measures; in other cases it may occasionally warrant an effort to completely exterminate the pest. Such decisions require reliable knowledge of the values which the pest will destroy if control is not undertaken and of the saving effected by different degrees of control at varying control costs. Such data must be obtained through control, valuation and damage surveys and through experimental work to determine the results obtained by variations in control practice.

#### NOTE

A news letter is issued each month throughout the year. During the summer the mailing list is expanded to include temporary employees. Pages are numbered consecutively from issue to issue in order to facilitate the indexing of articles.

## APPLICATION OF CONTROL METHODS IN THE INLAND EMPIRE

Experimental Ribes eradication has been carried on by the Western Office of Blister Rust Control since the summer of 1922 in various localities and under varying conditions. As a result of experience gained by the studies carried on under the control program this Office in the fall of 1927 recommended that the large scale application of control methods should consist of (1) general stream type eradication, and (2) eradication in pole and reproduction stands and maintenance of the proper Ribes-free condition in stream type.

This program is based on the fact that the most highly susceptible species of wild Ribes occur in dense concentrations in the stream type. These Ribes accept the disease from a greater distance and spread it farther than the other species. The removal of these concentrations of highly susceptible Ribes will afford the highest degree of protection to pine. When this immediate danger is removed it will then be time to undertake the protection of young timber stands which may contain considerable numbers of Ribes.

The time relation between the two parts of the program must be based on the rate of spread and development of the rust. The first effort is being made on stream type but if the rust becomes established in various localities it may be necessary to perform eradication in pole and reproduction stands before the stream type work is completed in other places.

This stream type eradication should be undertaken simultaneously by all agencies concerned and all lands needing protection should be worked over in an orderly fashion and under a continuous policy irrespective of ownership. This is an important point which has a great bearing upon the success of the work.

During the present summer the main eradication work is being performed on the lands of the Potlatch and Clearwater Timber Protective Associations. This work is on a cooperative basis, the associations, the State and the Federal government supplying funds for the work.

On the Potlatch Association land there are two 26-man camps: one on the East Fork of Potlatch Creek east of Bovill, Idaho, completing the area on which the first large scale application of chemicals was carried out last year and one on Gold Creek, east of Elk River, Idaho. This Gold Creek area of approximately 12,000 acres will probably be completed during July when this camp will commence work on the Deep Creek area, south of Elk River.

On the holdings of the Clearwater Association two camps of 26 men are working the Reed's Creek area in the vicinity of Headquarters, Idaho. Due to improved methods of work, eradication is proceeding at a rapid rate. Definite results for all camps will be reported in the August issue.

## PAUL BUNYAN AND THE RIBES

Allen P. Swayne

The hand eradication crews were a complete failure on Gold Creek because the Ribes were bigger than the pine trees. The only solution to the problem was to call in Paul Bunyan and Babe to pull them out. Babe was so strong he broke all the cables that were provided. Paul Bunyan was greatly surprised when a stranger came to camp and bet him \$1.000 that he had a cable Babe couldn't break. Paul took up the bet and the cable which was about 10 inches in diameter was tied to the largest Ribes lacustre. Babe was hooked to the other end of the cable. Paul Bunyan led Babe forward and the cable tightened. Then a strange thing happened. The cable started to stretch. The stranger had made the cable of India rubber. Babe stretched the cable 173½ mile but could not break it because there was no solid pull. He had started pulling in the evening and pulled all that night. When the sun came up next day Babe was still pulling but the steady pull of the cable was wearing him down. About noon there was a crash. The bush had pulled out. The stranger who was sitting on the cable was shot off into space and has not been seen since. Paul and Babe were so disgusted with Ribes pulling that they went back to lumbering. Paul cut the cable up and used it for suspenders for himself and his crew.

Elk River Camp.

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Oh early every morning every damn day in the week  
Comes a pounding on the dishpan and the cots begin to squeak,  
All the guys roll out a-groaning and pull boots on aching feet,  
And hobble out to breakfast - you should see and hear them eat.

Oh they are the Ribes hunters so fearless and so brave  
They search out the quaking Ribes and chase them to their graves,  
They search for them on the hilltops higher up than high,  
And also along the stream beds where it is far wetter than it is dry.

They search out the condemned Ribes wet with the morning dew,  
And yank them out by handfulls, they cuss out just a few,  
They find them in the afternoon, hot with the setting sun,  
And attack them with the chemical spray until the day's work is done.

Now listen all you rookies if blister busting you would go  
Here are a couple of facts it would be well for you to know,  
Be sure to bring out a good suit of clothes and plenty of B.V.D's,  
And don't forget your golf pants - don't bring any dungarees.

For Ribes hunting is a game that requires both brain and skill,  
An education might be an aid, I know that whiskers will,  
Now if a successful Ribes hunter you would be - just see  
That when you pack your old knapsack you get the right vocabulary.

Don Williams  
Elk River Camp.



## RIBES ERADICATION - EXPERIMENTAL PROGRAM

In addition to the application of the best methods of eradication determined to date, experimental work must be carried on in order to further increase efficiency and decrease costs to lower levels. Here are some of the projects:

Chemical Investigation - Shortly after the inception of the work it was seen that something more than a strong back and a weak mind was necessary to remove dense concentrations of Ribes found in stream and swamp types.

Effective hand pulling was not feasible except at a prohibitive cost. Investigations into the possibility of chemical eradication have resulted in the chemical application which is being carried on today. This investigation has involved a tremendous amount of intensive research into the morphology and physiology of Ribes, the most efficient chemical agents and their action on the plants. Laboratory work is necessary to determine the fundamental action upon Ribes plants of various types of chemicals. Extensive small scale applications of numerous chemicals are made each year in the field. Untested chemicals are not used as a basis for large scale application until they have been given sufficient preliminary tests.

Laboratory work is carried on each winter at Berkeley, California in cooperation with the University of California. A new Ribicide has been developed and will be tested in the field during the present summer. Offord and a strong back crew recently made up 2000 pounds of this copper complex "X", some of which has been shipped to Santa and Clarkia, Idaho, to Swim, Oregon, and to the Stanislaus and Plumas national forests in California for extensive field tests.

At Santa, Idaho a study is being made of the entry into and movement within the Ribes plants of the chemicals used in the chemical eradication project and of the factors involved in the entry, rate of movement and extent of distribution of these chemicals.

At Clarkia, Idaho, experiments are being conducted to determine the seasonal effect of the chlorate on Ribes. (See Frank Walter's write-up on Page 61.)

Methods Study - This study has been carried on for several years for the purpose of determining by actual experiment the most efficient size of crew, the best manner of working slopes by hand pulling, the best equipment for chemical eradication and any other factors which affect the cost and efficiency of both hand pulling and chemical eradication.

During the present summer the methods work is being carried on at Musselshell Ranger Station on the Clearwater National Forest where comparative tests of knapsack spraying and the use of power pumps for supplying the chemical solution to the eradication blocks are being

carried on. Swanson tells us something of the progress of this work on page 63.

Re-eradication Studies - Areas eradicated in the past are re-eradicated for the purpose not only of maintaining a desirable Ribes-free condition but to make special studies on root and crown sprouting and to determine the effectiveness of working methods in use at that time. During 1929 re-eradication of hand pulled areas is being carried on near Honeysuckle Ranger Station on the Coeur d'Alene National Forest on an area eradicated in 1927. A camp for the re-eradication of a chemically eradicated area has been established on the East Fork of Potlatch Creek near Bovill, Idaho where power and knapsack spraying were carried on in 1928.

Methods and re-eradication studies come under the eradication project. Other projects which the experimental program comprises and which have a direct bearing on eradication work are checking, damage to pine studies and Ribes ecology. These will be treated in the August issue.

#### FOURTH OF JULY AT THE HEADQUARTERS CAMPS

Picture if you will, forty-odd maidens evolving out of thin air. Picture forty or fifty blister rust boys in stagged pants and vari-colored shirts. Imagine the maidens gliding over the polished floor of the new dance pavilion at Headquarters, Idaho, in the arms of the blister rust boys - - and you will have some idea of how Camps #1 and #2 Headquarters, celebrated the Fourth of July this year.

George Whiting's Rust Removers "red hot" three-piece band, made up of Dykeman, banjo, McCarthy, banjo and Whiting, violin, burned up their instruments on all of the latest melodies, and with the aid of Rinn, Camp #2's personality man, who entertained with a few songs, kept the crowd in fine spirits until the closing waltz.

As early as 2 p.m. on the afternoon of the Fourth, the boys began arriving in the little village. Many of them gathered in front of the Post Office and enjoyed the exciting sport of watching some youngsters shoot fire crackers in the street, while others played with the bear cub or listened to the orchestra rehearse. Later on, many went over to the newly established drug store and bought candy bars and soda pop.

The pavilion, lately erected by members of the Clearwater Timber Company opened at 8 o'clock, and all filed in for a very entertaining evening.

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Prescott, our camp zoologist, says that he has discovered a new species of Goofa bird which he has classified as an Australian Dingbat. It has one short wing and one short leg. The short wing makes it possible for him to fly around hilltops, and the short leg helps him keep a horizontal position on hillsides.

Camp #2; Headquarters.



## CULTIVATED BLACK CURRANT ERADICATION

The eradication of the cultivated black currants from the western states was one of the delay measures instituted on the discovery of blister rust in the West, to delay the rapid spread of the disease from the infected areas to the commercial white pine belts.

The cultivated or European black currant is the most susceptible species of Ribes. It will take the disease from a greater distance and spread it farther to pines than any other currant or gooseberry. With this species of Ribes removed the rate of spread of the disease was materially curtailed.

The work of eradicating the cultivated black currant has been completed in the states of Montana, Idaho, Washington and Oregon. It has been carried on for five seasons in California where 49 of the 58 counties have been worked. During the present season - well, read what George Root, California State Leader has to say about it.

### CULTIVATED BLACK CURRANT ERADICATION IN CALIFORNIA

G. A. Root

On July 1, the sixth season of black currant eradication started in Santa Clara and Los Angeles counties respectively. Four men are employed in the former and one in the latter county. Three automobiles furnish transportation. Two of the five men will do the "foot work" in the several cities. On the completion of Santa Clara County, the work will commence in Santa Barbara and Ventura counties.

The heavily populated area of Los Angeles County will necessitate a long period of work, though climatic conditions would seem to preclude many plantings being found.

### OUT WHERE THE RUST BEGINS

Oh, it's out in the woods we are, bo  
Out where the Rust begins,  
Where the air has a kick and the brush is thick,  
And a frequent diversion is a fall in the Creek.

Oh, it's out in the woods we are, bo  
In the woods of Idaho,  
Where they talk about bear and get a big scare;  
Where whiskers grow long and hair cuts are rare.

Oh, it's out in the woods we are, bo  
Where the Blister Rust begins,  
Where bugs are tough and petiolare tougher,  
And lacustre is harder and longer and rougher.

Headquarters Camp

## UNUSUAL CALIFORNIA WEATHER

F. A. Patty

Early in June a heavy frost occurred on the Stanislaus National Forest causing damage to the deciduous and herbaceous plants. No doubt other areas north and south of this forest were hit equally as hard. The frost did its greatest damage to the native vegetation from an elevation of four thousand feet to the higher summits. The pears, apples, grapes and other fruits in the foothills were severely damaged.

The oaks were in about half leaf when the freeze came and partial or complete defoliation resulted. Other deciduous plants such as the dogwood, willow, alder, cottonwood, etc., were also injured to some extent. The damage is quite noticeable along the Sonora-Mono Pass road and along the railroad of the Pickering Lumber Company in more exposed places. The vegetation in protected places and in the dormant stage was not killed back by the frost. A few herbaceous plants were out far enough to be killed.

G. roezli, which is one of the first plants to begin activity in this region, received a rather severe set-back in some localities. At Gooseberry Camp many of the exposed bushes had their branches killed back to the crown. However, bushes only a few feet away which were protected are now bearing a fair crop of fruit. Many bushes on other parts of the forest which were examined have only light crops of fruit. R. cereum and R. nevadense growing at Gooseberry Camp were apparently not injured by the frost. They were just beginning to flower during the last week of June. R. nevadense on the exposed slopes at Rosasco had the flowers killed but the bushes were little damaged. The young growing tips of white and Douglas fir were also killed on the young trees in many places. New shoots have been sent out and the damage would be hardly noticeable if it were not for the dead tips which still remain.

About two weeks of unsettled weather followed the freeze with rain, hail, snow and a little sunshine. The unsettled conditions were climaxed by a storm which lasted for about thirty-six hours. On June 17 the storms ceased, and the usual warm California sun has prevailed ever since.

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Blister rust camps seem to draw the most hardy from the ranks, both mountaineers and the college boys.

One of the boys, an old timer in the ways of the world, though rather young in years, told of how mosquitoes, when unable to get into a tent, would often poke their bills through the top, and, when the boys bent their bills, would fly away with the tent.

There is "Shorty" for instance. He told the fellows that all the cougar and bear stories were the bunk and then told the best of all. He and his partner used to lasso "cats" and hold them by their tails.

Elk River Camp.

## EXPERIMENTS IN THE APPLICATION OF CHEMICALS

F. O. Walters

The object of this project is to determine the efficiency of various sprays and concentrations of sprays together with effectiveness of acid and alkaline adjustments.

Half-acre plots are laid out, the number of feet of live stem and the per cent of Ribes concentration is estimated and recorded before spraying starts.

The area being worked is especially adapted to the experiments as three troublesome Ribes are present, namely, Ribes petiolare, R. lacustre and Grossularia inermis.

Five, ten and twenty-five per cent solutions of sodium chlorate are used. These same weights of chlorate are used with varying amounts of calcium chloride and again with magnesium chloride. A new spray, called copper complex, is being used. The day is divided into morning, midday and afternoon spraying periods in an effort to note any effect time of day might have on the efficiency of a spray.

Some of the sprays are subjected to an acid adjustment, others to an alkaline adjustment. Still other sprays are kept at a nearly neutral point. It is hoped that certain of these adjustments may be effective on certain species.

There are thirty-one sprays and combinations of sprays in all. As many rotations as possible will be made with these sprays to determine what effect the time of season may have on spraying efficiency.

The results will be closely checked next year.

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The cook at Elk River camp still has his axe within easy reach of his bed. If the grizzly bears continue to stick around camp much longer, we have the cook's promise of head cheese if Mr. Grizzly comes in head first or rump steak if he backs in.

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How is this for consideration? Flynn takes his Sax 23 chains down Gold Creek from camp to practice. (Editor - Is that far enough?)

---

It's A Long Tough Hike to Gold Creek

Nellie Nelson: (at Elk River Drug Store) "Give me one of those papers please. An' say - how much does it weigh?"

## OREGON NOTES

L. N. Goodding

The eradication work at Still Creek is progressing. It is hoped that the entire area can be cleaned up this season and that preparations can be made for more extensive operations in the sugar pine regions next season. The Still Creek project should be considered a "noble experiment" at any rate. The work will have been completed none too soon for blister rust is severe but a few miles away.

The men on the job are all old hands. All of them also know blister rust in the field. In a few days the entire crew will journey for a days scouting to the Still Creek Summer Home Site where a real infection in pines will be studied. At any rate Oregon has it over Idaho in some respects.

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F. P. Sipe is doing ecological work in southern Oregon again. He has spent several days in the Prospect and Union Creek districts checking on plots started last year or two years ago.

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G. D. Darker, from the Arnold Arboretum is headquartering at the Battle Axe Inn at present. He expects to spend several days with Goodding scouting for Hypodermas, Hypodermellas, Lophodermiums, Pucciniastrums, Uredinopsises, and the Lord knows what else. Please note that Darker is scouting for the above; Goodding will be content to scout for Cronartium ribicola and possibly a Scleroderris or two if they intrude themselves.

### ANDERSON BROADCASTS FROM HEADQUARTERS CAMP

The other day one of the boys came into a filling station, took off his tank and to his surprise found that it had collapsed. An examination revealed the fact that the air vent in the cap on the tank had become plugged and as the solution was pumped out a vacuum was formed. The vacuum was sufficient to cause the collapse of the tank. The tank was reshaped by attaching an automobile pump and the pressure returned the tank to approximately (that word certainly covers a multitude of errors - something like "estimate" instead of "guess") its original shape.

We are enlarging the vents in the caps on all of the tanks.

The cap is a Chevrolet gas tank cap so it behooves Mrs. Klatt and "Put" to keep a full tank of gas on their new sixes.

---

I wonder if Guernsey tried to build meat houses for his cooks this year? I'm betting on the flies.



## METHODS WORK - POWER SPRAYING

H. E. Swanson

Should this reach you in time for the news letter I might say that the power unit is working fine and we are covering Mussellshell Creek at the rate of a mile to a mile and a half a week, which in acreage terms represents from 10 to 12 acres per day in medium and heavy concentrations of Ribes, with a 13-man crew. What will these men here do when they become experienced?!!!! Thus far the men have had only five day's experience in any kind of eradication work. Power work still has a chance and a good one. Knapsacks would have a pretty tough time of it on Musselshell. We hope to work this whole drainage including Gold Creek, by the close of the season.

For the power enthusiasts who became acquainted with the motors at Morro Bay last winter, it may be of interest to know that both motors on the job have failed us, one of them beyond repair; the other, "Old Betsy", was repaired overnight and has been doing full time ever since. When we get a spare motor down here we shall be able to rest much easier.

Well, Mr. Editor, we couldn't "Get Hot" down here because we are hotter than hot now. When it comes to writing it is a question of cooling off.

### RIEBES (To the tune of "Daddy")

Ernest Prescott

Ribes, dear old Ribes,  
You'll always be a pay check to me,  
I've trampled all over you with hob nailed boots,  
And called you bad names as I tugged at your roots,

Ribes, dear old Ribes,  
If you're much larger, I'll leave you alone,  
You're in the creeks everywhere,  
You're hard to get, I'll declare,  
I'm all tired out so I'm going home.

Headquarters Camp.

### RE-ERADICATION

C. O. Peterson

You ask for a message from every one; well that's easy. Our message is short but it is full of interest and you can bet your old worn out sox that it is true. We have been here 10 days now so we are pretty well acquainted with the country for Shank's horses have carried us over many miles (mostly up) and we are all observing young flower pickers. But for the vital message - thanks to Swanson and his good work in 1927 we have not as yet found any blister rust (Cronartium ribicola Fischer). Good protection I calls it - may the noble work go on.



## WHITE PINE INFECTION NEAR ELK RIVER, IDAHO

H. N. Putnam

On July 6, 1929, E. L. Joy and R. L. Pierson discovered a young blister rust canker on white pine at the junction of Deep and Elk creeks, 6 miles south of Elk River, Idaho. Subsequent inspection in this vicinity revealed four more infected pines with one canker each. It is estimated that 1% of the pines are infected. The pine infection extended for approximately 3/4 of a mile along the stream. There was no apparent center of infection.

Analysis of the cankers showed that very probably pine infection originated here in 1923 and that a second wave occurred in 1927. Contrary to conditions at Newman Lake, where several hundred cankers originated in 1927 in association with G. inermis, the pines at Deep Creek showed only 2 cankers of 1927 origin, although they were associated with R. petiolare and other Ribes species were abundant.

Infection was found on all four Ribes species associated: R. petiolare, G. irrigua, R. viscosissimum, and R. lacustre. Infection was quite abundant, mostly in the uredinial stage, with telia present in small quantities. R. viscosissimum and G. irrigua were found infected on the bare hillsides.

Abundant Ribes infection was found at this point in 1928. It is the intention of the scouting project to re-inspect this season all Ribes infections found in Idaho in 1928. Discovery of rust in the same locality two years in succession will indicate close proximity to pine infection. If Ribes, infected in 1928, fail to show infection in 1929, indications will be that the aecial source is not in the immediate vicinity.

## WISE CRAX FROM HEADQUARTERS CAMPS

Pat has stopped killing Ribes and has turned his attack on the boys in the fly camp. Pat is cooking.

Will some one tell Heinie whether a giraffe is a cross between an ostrich and a boa constrictor, or if it just got its head caught in a fence.

Luke played four measures on his clarinet the other night without a high pitched toodle. The next sixteen however were true to form.

Moustaches are being raised by all who are capable. (Editor-Aren't there any "just trying"? Strange!)

## EXCERPT FROM EMPLOYMENT CONTRACT

"I am to receive pay and traveling expenses from June 21 to Clarkia, Idaho. - - -" (Editor - Somebody must have told you!)

Luncheon was served at Lundberg falls. The host (and foreman), Mr. Edwin C. Lundberg, late of Everett, served his combination special of peanut butter and fig jam, as well as tasty pork sandwiches. The dessert consisted of portions of smashed cake, a delicacy which resulted when the lunch pack served as a cushion to break the fall of one of the guests who stumbled in a beaver alley. Dried pears were also popular; the fish seemed to relish them more than any other part of the lunch. No stimulants were served, the Chief furnished all the pepper needed and besides, that Java from the cook house stays with a fellow most of the day anyway. But there was plenty of that good old Gold Creek water and the boys drank copiously of it. The guests then chose up sides for a story telling bee. The Idaho boys won, scoring on 2 bear stories and 3 tainted tales. The Oregon boys could not put their Smokehouse poetry across. The usual 12:30 whistle sounded and before the Chief could get it back in his pocket the boys were at the berry bushes again.

(Excerpt from an application blank)

Give three references as to your ability, character etc.--  
Ans. I have blue eyes, brown hair and about 5'6" am chunky like.  
I have been used to hard work all my life and have a good reputation so far.

(Excerpts from employment contracts, 1929)

Cheap Help! - "----I, the undersigned, do hereby accept employment with the Bureau of Plant Industry, Office of Blister Rust Control at the rate of \$270 per day and subsistence----

NOTES

Messrs. H. E. Allanson, Assistant Chief of the Bureau of Plant Industry, L. W. Kephart, Senior Agronomist of the Office of Forage Crop Investigations and incidentally one of the first men to test the possibility of chemical eradication in the East and E. G. Lachmund, in charge of the Office of Forest Pathology at Portland, Oregon, accompanied by S. N. Wyckoff, in charge Western Office of Blister Rust Control spent July 11-13 visiting blister rust operations near Bovill, Clarkia and Santa, Idaho.

\* \* \*

W. F. Painter was a visitor to the Spokane Office on July 15.

\* \* \*

Let not our friends in California feel slighted. The August issue will deal as fully as possible with the important work being carried on in the sugar pine regions.

\* \* \*

When any questions come up re the cause or control of blister rust, discuss them with your project leader; he is a walking compendium of blister rust facts.



2







Vol. 4

August 15, 1929

No. 8

W E S T E R N   B L I S T E R   R U S T

N E W S   L E T T E R

\*            \*            \*  
Summer Issue No. 2  
\*            \*            \*

U. S. Department of Agriculture  
Bureau of Plant Industry  
Western Office of Blister Rust Control  
Spokane, Washington



## CALIFORNIA ERADICATION

The Ribes eradication project was initiated in California in 1926 to develop and perfect methods of work and acquire cost data under various working conditions in the sugar pine regions.

In 1926 and 1927 the work was carried on in the Strawberry region on the Stanislaus National Forest. This area, within the optimum range of sugar pine, contained extensive areas of mature timber and cutover lands. Different methods of logging and brush disposal provided an opportunity to study Ribes regeneration on areas logged under different management practices. Sugar pine occurs over the entire area. Much of the stand is characteristically open, park-like in appearance with only occasional clumps of brush. Coniferous reproduction is sparse and scattered. On the cooler slopes the brush, mainly spiny Ceanothus, manzanita and scrubby chinquapin, occurs in greater concentrations. Brush is thicker also on logged areas. Here numerous seed trees and advanced reproduction are found. In 1926, 3,134 acres containing 183,296 Ribes or 59 Ribes per acre, were eradicated at a cost of \$2.22 per acre. In 1927, 3,536.4 acres containing 211,040 Ribes or 59.68 per acre, were eradicated at a cost of \$2.00 per acre.

In 1928 the scene of activity was shifted to the Dorrington area in the northern section of the Stanislaus National Forest. This work was directed toward the development of eradication methods in a stand of uncut sugar pine types, containing both sugar pine-yellow pine and sugar pine-fir types in various associations. This area contained a sufficient area of virgin forest for the development of scouting methods blocking out areas of few or no Ribes. Varying concentrations of Ribes and brush species in different age classes permitted the procuring of data and development of methods under different working conditions.

Here sugar pine ranged from 15% on dry south slopes to 50% or 60% on the more moist north and west slopes. 268,202 Ribes, 31.34 per acre, were removed from 8,558.5 acres of this sugar pine type in 1928 at a cost of \$1.00 per acre (including checking and pre-eradication costs).

During the present summer control work is being carried on in two camps on the Plumas National Forest. Here the sugar pine is of more average quality than on the Stanislaus. The Meadow Valley area where the work is being carried on comprises one of the best stands of mature sugar pine on the forest. Cost figures can be procured on good, average and poor sugar pine sites.

Grossularia roezli and Ribes nevadense are the main species of Ribes on the area. The bushes are large in size and seem to be rooted in bed rock, each one requiring the use of an eradication pick to aid in its removal. G. inermis, plentiful in patches along the more sluggish streams

and on the borders of swamps, represents a chemical chance. Hand pulling would be well-nigh impossible.

Owing to the difficult working conditions progress has been slow. The heaviest areas of Ribes have been worked out, however, and the work is progressing at a more rapid rate. Up to the end of July, 1,949 acres containing 380,543 Ribes, 195 Ribes per acre, had been eradicated.

#### PROGRESS OF BLACK CURRANT ERADICATION

G. A. Root

The first month's work on this project has resulted in the completion of Santa Clara County with 20 plantings comprising 133 bushes. Portions of Los Angeles and Santa Barbara counties have been worked but no plantings were found.

#### PRESIDENTIAL COURTESY

Ordinarily, the high status of a public official or the marked prominence of a citizen does not exempt their properties from coming under the close scrutiny of the black currant scout. In the case of the residence of President Hoover at Palo Alto, we extended the courtesy of making inquiry concerning the presence of bushes. Our partial reason for this, however, may be attributed to the almost impenetrable barrier which has been thrown around his residence. The cause for this has been the maddening crowds which formerly surged around his home, stripping flowers and shrubs in the gardens to carry away as souvenirs. We feel that under the circumstances the President would not look upon our course of action as denoting a lack of thorough work.

#### RIBES ERADICATION, IDAHO

Eradication of stream type on the lands of the Clearwater and Potlatch Timber Protective Associations is proceeding at a rapid rate and a high degree of efficiency is being maintained.

On the Clearwater Timber Protective Association 411.2 acres have been sprayed, using 26.5 gallons of chemical solution per acre. 447 acres containing 322 Ribes per acre have been hand pulled. Protection has been afforded to 7,805 acres of timber land up to July 31.

On the Potlatch Association 9,680 acres have been protected through the eradication of 60.2 acres by spraying and 883 acres by hand pulling. 60.1 gallons per acre were consumed in spraying and 420 Ribes per acre were removed from the hand pulled area.

On the Musselshell great progress has been made in the application and development of methods. There, 203 acres have been sprayed using 31.6 gallons per acre and 93 acres, 111 Ribes per acre, were eradicated by hand pulling. 3,040 acres have been protected up to July 31 by a 13-man crew.

*31.6 is OK corrected on page 11*



## THE BATTLE OF THE MUSSELHELL

Ed Simmer

The big battle on the Musselshell between the Rusty Blisters and the U. S. Department of Agriculture rages fiercely on as the first month of hostilities draws to a hectic conclusion. Strategic moves by warring factions causes the tide of battle to ebb and flow, first one side and then the other holding the upper hand, but by this fall the U.S.D.A. confidently expects to completely and ignominiously wipe out their adversaries.

The struggle however is not without its effects upon our little army of 17 men holding down the Musselshell front. Faces scratched and scarred in the battle of Spruce Thicket, black and blue knees occasioned by spying vines lying in ambush to trip us as we creep up on unsuspecting Ribes; and necks and arms furrowed and burning from the sporadic attacks of scouting parties of mosquitoes, unerring and deadly in their accuracy to pot shot their opponents when vigil may become lax. Counter attacks by supporting parties of deer flies, gnats, bees and hornets with bayonets drawn add to the general confusion, insidiously wearing down their opponents by constantly sending into the fray endless reinforcements.

The wily beavers, comprising the non-combatant forces of the enemy have inextricably entrenched themselves in an unwavering front on the Musselshell and on the tributaries making up the right and left wings. Wet and muddy individuals staggering nightly into our camp behind the front give mute evidence of the dangers encountered by mud holes, bogs and submerged snags in the beaver swamps.

Battered, but with grim determination etched upon the faces of our small force, under the able leadership of Major Swanson, we daily advance upon the enemy, hands firmly grasping spray gun triggers, relentlessly decimating their number, the valleys reverberating with the battle cry of "they shall not live".

### AT FIRE FIGHTING CAMP

Nick enters cook tent, reaches for pears, but stopped by right of cook coming from thin air. Both spar for seconds. Cook thinks Nick weakening so dashes him in dish water. Nick comes up smiling and hollers "more" as he flings box at Chuck vendor - floors him for count and a half - five flunkies come to assistance of head canopener - grasp Nick - cook now able to find Nick but too weak to continue. Fight then called off on account of fire - fire in the bug boys' eyes.

A belt was awarded the most inspirational man at the fire. We expected Nick to get it but Hart rated the prize. It wasn't the jeweled kind that champions usually receive it was a new kind of pink elastic affair. I never saw one before but Hart seemed to know all about it.

Elk River Camp



## WESTERN WHITE PINE MUST BE PROTECTED

Extract from "Relation of Forest Management to the  
Control of White Pine Blister Rust".

Dr. E. E. Hubert

Collaborator, Department of Forestry, University of Idaho.

If western white pine, which is said to be several times more susceptible to the rust than eastern white pine, is to remain a lumber producing species in Idaho and the adjoining regions, it must be protected against this destructive disease, (white pine blister rust). The "if" is intentional, for some will argue that the species may not be worth the effort, and that the secondary species can later fill the gap. Let us not make the grave mistake of dropping a perfectly good bone and jumping into the pool for a reflection that appears as good or better, only to find we have lost both. The number of new insect and fungous pests has multiplied rapidly in the past twenty years, and species of trees heretofore nearly immune to the attacks of many pests have begun to show susceptibility to newly introduced insects or fungi. The history of the chestnut tree of the eastern United States serves as a startling example of the wiping out of a desirable tree through the ravages of a disease imported from the Orient. Western white pine is too valuable a species to be sacrificed to the problematical increase in future values of the remaining species in the type. If the secondary species show promise of becoming valuable enough to manage as a timber crop in future years, how much more valuable white pine may become in the same period of time. We must accept the continued superiority of western white pine over the other species in the northern Idaho forests, and with this as a basis construct and put into effect a workable program of blister rust control for the protection of this tree. The argument that we have a plentiful supply of other species in this and other regions is not good forestry. We must strive to keep every acre of good forest soil producing trees of merchantable value. This can largely be brought about by improved forestry practices among which cutting to a diameter limit with its resultant residual stand commends itself for trial.

## PULLING RIBES

To the Tune of "I'm Sorry Sally"

R. Hagar

We're spraying Ribes,  
And pulling Ribes  
Down on the Musselshell.  
Why we spray Ribes,  
Why we pull Ribes,  
To you in song we'll tell.  
'Tis said that Ribes spread diseases,  
Most dread disease of pine trees,  
And its killing forests  
Just destroying forests of fine white pine.  
So we spray Ribes and  
We pull Ribes down on the Musselshell.  
Methods Camp.

GERMINATION OF NATURALLY STORED SEEDS OF RIBES  
VISCOSISSIMUM FOLLOWING BURNING OF FOREST FLOOR.

W. A. Rockie

The heaviest stand of seedlings of R. viscosissimum from naturally stored seeds which has come to our attention was encountered on one of the controlled plot studies at Lakeview, Idaho during the present season. The plot was one milacre in size (6.6 feet square) and the surface of the duff had been lightly burned in July, 1928. The plot was established in a 40 year stand which is dominantly Douglas fir and larch, with white pine and cedar of common occurrence. There was practically no vegetative ground cover below the timber stand, and the stand is entirely Ribes-free. The results to date are shown in the following table:

Date of Record	Number Ribes Seedlings in Milacre	Number Ribes Seedlings per Acre
September 13, 1928	-	-
May 1, 1929	1	1,000
May 23, 1929	1,427	1,427,000
June 19, 1929	1,804	1,804,000
July 8, 1929	1,629	1,629,000
July 24, 1929	664	664,000

CALIFORNIA ECOLOGY

F. A. Patty

Definition of Ecology:

Plant ecology is often defined as the study of the plant in relation to its environment. The latter may be considered as all the factors which influence the plant from germination to the production of seed and finally the death of the individual and the completion of the life cycle. The more important environmental factors are soil, moisture, climate, light, the associated plants, birds, animals and man.

Purpose of Ecology in California:

The purpose of an ecology project in California is to make a comprehensive study of the Ribes in the sugar pine regions to determine the factors influencing germination and growth, frequency and distribution by timber types. When all of these factors have been determined, they can be used to aid in the suppression of Ribes by natural means, silvicultural practices, and artificial means, hand and chemical eradication.

Location of Study Area and Size of Camp:

The studies were begun in 1928 on the Stanislaus National Forest on the west slope of the Sierra Nevada Mountains and are being continued during 1929. The camp is made up of two 2-man crews and the project leader. This year there are two former eradication men from Idaho, one eradication man

from California and one new man to make up the two crews.

Reasons for Selecting Present Study Area:

The Stanislaus National Forest contains consecutive cutover lands from one to twenty year standing, as well as fine stands of virgin mature timber. The present logging is being carried on by two large logging companies on private land and Forest Service holdings. The former land is usually cut clean so very little timber is left after operations have been completed. One of the companies is cutting only the sugar pine and yellow pine on their own lands, leaving the incense cedar, white fir and Douglas fir. On the Forest Service holdings the lumber companies must cut a certain amount of the inferior species as well as the sugar pine and yellow pine. A definite number of seed trees are left and the brush is piled and burned after logging. The methods which the Forest Service is forcing the logging companies to use should produce good reproduction if the proper fire protection is given.

Methods Used in Making Studies:

The various degrees of cutting and the different logging methods offer an excellent opportunity for some interesting studies on the re-establishment of Ribes after logging. In order to obtain this data milacre plots, permanent fenced and unfenced plots and transects are placed in various places in the different age cuttings and in mature timber. The data from all of these plots will give the information which is desired to aid in Ribes suppression.

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Root, Offord, Benedict and Ye Editor visited the ecology camp during the latter part of July. It was observed at dinner time that the following were the favorite dishes of this group of men.

Root - More turnips.  
Offord - More muffins.  
Benedict - Still more lima beans.  
Ye Editor - (censored)

BELIEVE IT OR NOT - - - NOT BY RIPLEY

The nest of a field mouse was recently discovered under the front seat of the ecology Ford truck. It contained four tiny mice about ten days old, and the mother, all were very much alive. The mother had taken two large handfuls of padding from the back rest of the front seat so that her young ones had a soft and warm bed. A hole under the seat permitted the Mother mouse to leave the car at night to seek food. Owing to the fact that government cars are not permitted to carry passengers, the family was removed after a fifteen or twenty minute chase.

California Ecology.



LARGE FEET  
C. O. Peterson

Believe it or not but the re-eradication camp at Honeysuckle claims the men with the largest feet in the Pacific Northwest.

One of the men has feet so large that he has to back up to a door in order to knock. Another's feet are so long that they have to use giraffe skin in order to get leather long enough for his shoes. The other man with the abnormally large pedal extremities claims to have broken his arches while crossing the street at Howard and Riverside. When asked to explain he said that his heels were on one curb and his toes on the other so his feet just naturally sagged in the middle to breaking point.

Evidently the boys aforementioned have not heard of the Peace Pact which says "All gun boats and scows must be junked".

---

Don' wanna hear about brush  
Don' wanna hear about rush  
Gimme a hunk  
Of a well padded bunk  
And leave me alone in a hush.

While all up the hillsides I'm beaten  
An' down thru the gullies I'm fleetin',  
I've one general scheme  
Alive in my bean  
'Bout the best and most ways of eatin'.

Fred Anderson  
Re-eradication Honey-  
suckle.

THOSE RIBES I MISS  
Ralph Prose

I've seen them in the morning time,  
Fresh and green in the morning air.  
I've seen them at the hour of lunch,  
Uprooted everywhere.

I've seen them too, these plants of earth,  
When shadows lengthened at end of day.  
I've seen them along the trail to camp  
As I lag on my carefree way.

I've seen them at nite, as I lie in my bunk,  
Loom large in the creek and dell,  
I've seen the ones that I missed, and feel sunk,  
But I'll chance to spray them in Hell.

Elk River Camp

## THE CHEMICAL ERADICATION PROBLEM IN CALIFORNIA

H. R. Offord

Quite recently Benedict, MacLeod and the writer made a survey of all experimental chemical plots in California. Pictures were taken by MacLeod illustrating the results of work on R. nevadense, R. cereum, G. roezli and G. inermis. After the survey had been made it was patent to the writer that California Ribes were not reacting to chemical sprays like the Ribes of north Idaho. Resprouting was quite general in the areas treated with various chlorate mixtures last year and releafing was quite noticeable in most of the areas treated this season with copper complex "X" and "Y" series. Releafing after treatment with copper complex was particularly noticeable in the case of R. cereum.

Looking at chemical eradication possibilities in California in rather a broad sense, it is apparent that two factors militate against successful chemical eradication. In the first place a low humidity which prevails during the greater part of the field season in the Sierra, reduces the length of time during which the chemical remains in solution on the leaf. Such a condition causes too rapid a concentration of the chemical and causes it to act caustically on the leaf instead of acting in a more physiological manner. In the second place water for the spray solutions is not always available close to the areas which are difficult to eradicate by hand pulling methods. Some little time ago Mr. Wyckoff suggested using a hygroscopic dust for California chemical work and in view of the results obtained to date with sprays it is now felt that some hygroscopic dust, other than a chlorate mixture, represents the best chance for the solution of this problem.

The writer was much impressed by the heavy concentrations of G. inermis at Meadow Valley which were proudly exhibited by the redoubtable Benedict. In fact these areas reminded the writer so strongly of the beloved areas of G. inermis in north Idaho that he became very homesick and left camp immediately. Not quickly enough, however, to escape signing a contract for the utilization of these areas in experimental chemical work, a concession which Benedict granted most graciously. Eradication of G. inermis in northern California is a real chemical job.

---

"Fink" Harding, the silver tongued songbird at Camp #2 in California was attempting one day to impress the inspecting bosses with his earnestness at digging Ribes. Suddenly and most unexpectedly he slipped and slid over a cliff with numerous choice rocks awaiting him 20 feet below - just as he went over the edge the crew boss (Dunshee) grabbed the end of the Ho-dog which "Fink" was still holding and arrested his speedy departure. Benny grabbed the crew boss so he wouldn't go over, and then with the camp boss and the other crew men's help young Harding was hauled back to safety. As the tale was retold in the evening the most noteworthy comment came from "Looby" Wilkins, who remarked, "what, all that without a rehearsal?"

Winfield Dunshee



I AIN'T SKEERED  
(Limericks about Varmints)  
Frad Anderson

A guy in our bunch saw a bear,  
And he quickly vamoosed from there,  
The teeth of the beast,  
Didn't scare him the least,  
'Twas only the length of his hair.

His quills stick out all awry,  
And I step around him so sry,  
'Tain't the quills in him,  
It's just the dull glim,  
Way back in the depths of his eye.

Little wasps were made by the Lord,  
But why did he make 'em that sword,  
To his face I'll stand ground,  
But when he turns 'round,  
Aw, I just can't stand being bored.

They told of a bird called the grouse,  
I thot about the size of a louse,  
I ran at the whirr,  
But I tell you, sir,  
I'll swear he's as big as a house.

I doubt if a measuring worm can bite,  
Or scratch one up in a miniature fight,  
It's the green and the grey,  
From which I stay 'way,  
Those colors are surely an awful fright.

I never saw an owl as yet,  
But I wouldn't care for one as a pet,  
I might see one,  
If I carried a gun,  
Aw, the hoot scares you too, I bet.  
Re-eradication, Honeysuckle.

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Swanson reports moving camp on August 3, five miles up the Musselshell: "with two pack strings, 9 head to the string, the move was made in one trip. Thanks to the Musselshell Ranger Station packers, who can't be beaten, the trip was made without any difficulty, even tho the Musselshell trail is full of hazardous spots".

TO THE TUNE OF AVALON TOWN

R. Hagar

Think of the Ribes you've yanked,  
Think of the spray that you've tanked,  
Think of the money you banked  
Way out on the Musselshell.

Think of the fun that you had,  
Really it wasn't so bad,  
Now don't you say you're glad,  
You came out to Musselshell?

Some day when you're alone and blue,  
Think of all the good fellows you knew,  
And too, when you get hungry and sore  
You'll wish you're back once more  
Where there are good eats galore  
Way out on the Musselshell.  
Methods Camp

BUG CHASERS TO THE FIRE

Allen P. Swayne

Twelve men in a line  
Each with a packsack  
Clad in rough clothes  
Heavy boots on their feet  
Climbing a steep hill  
Along a narrow pack trail  
All are thirsty, panting and weary  
Yet each follows each  
Close in the steps of the leader.  
The dust chokes and blinds them  
But nothing can stop them  
Stumbling and tired the weaker ones  
Fall to the rear and are left behind  
The stronger surge forward unceasing  
For they are going afar to fight fire  
Back in the forests and mountains.  
Elk River Camp

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Bill Guernsey has finally succeeded in obtaining a camp with a fly-proof meat house. This is special to the ones who wished the information in the July issue of the Blister Rust News. - E.L.

Editor - Anderson, please note.

BLISTER RUSTING AND ASSOCIATED ACTIVITIES  
IN THE BAY REGION OF CALIFORNIA

R. L. MacLeod

Before commencing a contemplated trip thru the Sierra I spent an afternoon in San Francisco on official business. There I visited the academy of Natural Science in Golden Gate Park. While I knew that the exhibits were too elaborate for blister rust work I hoped to extract an idea or two which might apply to educational work. These exhibits are marvelously well done and most interesting. All sorts of animals and birds are depicted in their natural habitats. Apart from the interest in the extremely life-like groups it is really marvelous how the background, painted on a vertical curved wall, blends with the foreground in perfect perspective.

While in Golden Gate Park I visited the Aquarium. I had seen about all of it when I heard a commotion and in two minutes the place was almost cleared. I couldn't understand this sudden turn of events. Perhaps the keepers thought they had seen a rare specimen of a new piscatory species and tried to pull a fast one. However, I eluded them and settled into a seat on the street car with a sigh of relief. I still prefer death to the relinquishment of even the appearance of liberty.

However the Aquarium was intensely interesting. While I have read or heard of many different kinds of fish I had never realized that there were so many species which actually carried the nomenclature of the finny tribe. All sorts of shapes and sizes, in various and vivid colors, were represented, taken mainly from the waters of California and tributary territory, such as Samoa, Australia, Central America, Africa, Oregon, etc. Neither space nor memory permits a full description. Suffice it to say that were I not a strict adherent to the spirit of the 18th Amendment I should have emerged a semi-reformed character thru the temporarily purging influence of strict and solemn vows.

Seeing that my experiences were telling on me and that I should be shaken out of it, Offord took me on a trip in his personally-owned Chevie. We went to Watsonville to inspect and photograph results of chemical experiments on a plantation of currants. Some of the early experiments with the complexes were tried here and results are not so good as in later experiments but the chlorate is certainly having its effect. You should see those Ribes turn up their whatever they turn up when they "shuffle off this mortal coil".

We returned to Berkeley via Santa Cruz where we lunched and, as a secondary consideration, whiled away a few moments watching the voluptuous vamps disport themselves on the beach under various and varying degrees of coverage. We were interested of course in both the feminine and nuder gender.

I finally tore my companion away from there and we proceeded to Berkeley thru the Santa Cruz Mountains. "A rose by any other name would

smell as sweet"; a hill is not camouflaged any by being called a "mountain". However, this was a delightful trip through some very pretty scenery. Here was my first introduction to the famous California redwoods.

And so, back to Berkeley and on to the high Sierras - but more of that anon.

#### THEN CAME THE DAWN

George W. Siewert

The night was pitch black. The pale blotches of moonlight here and there among the trees produced a ghostly effect in the forest. Something sinister pervaded the night. One felt, subconsciously, that his nerves were tensed to the breaking point - a nameless expectancy described the feeling most accurately.

The men in their cots tossed, and rolled and slept fitfully. Surely, something was going to happen.

Slowly, very slowly the black of night changed to gray. Dawn crept upon the inhabitants of the forest. Gradually the sun rose and peeped over the mountain tops. It seemed to wear a cunning smile as if it knew what was going to happen.

Suddenly, a crash rent the still air of early morning, a banging noise was heard. Men awoke with a start. The camp was all confusion - men were running hither and thither, some carried towels. Gradually realization possessed me; 'twas but the cook pounding on the dish pan, and another breakfast was about to be served in the Blister Rust Camp on the Musselshell.

#### OUR SIDE WON

To work off a little excess energy as well as put an end to the arguments regarding the special merits of each camp, a baseball game was played a short time ago between Blister Rust Camps 1 and 2 in California. This epochal contest was played at Camp #2 as the diamond there had but one gully and a hillside as compared to Camp #1's ankle-breaking field. Both pitchers tired early but had to last the full game due to a scarcity of substitutes and a desire to prove themselves "Hardies". The score-keeper was as busy as a country postmistress with the week-end post cards, but finally announced the result as a 50 to 20 victory for Camp #2. Camp #1 had as its only comeback the fact that they were the better losers.

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The foreman of the chemical eradication in Camp #2 at Elk River wants to know how many flies there should be in one pint of glue.

---

Gene: "Hey, Electricity, come and help me with this Ribes".  
Donald: "How do you get that way calling me Electricity?"  
Gene: "Well you always take the course of least resistance."

Re-eradication, Honeysuckle



I don't mind Ribe eradicating  
And hiking I don't mind,  
But for any more fire fighting  
I'm going to be hard to find.

Oh I didn't care much for the smoke  
And the digging of fire trench  
Night patrolling wasn't such a joke,  
And the heat it was intense.

But what really got a fellow  
And ate right into his soul  
Was the cook's early morning bellow  
"Roll out! Fire in the hole!"

Don Williams  
Elk River Camp

#### NOTES

Professors D. R. Hoagland, Head of the Division of Plant Nutrition and T.H. Goodspeed, Chairman Department of Botany, of the University of California spent August 7-12 visiting the application and investigative work of the chemical eradication projects in north Idaho. These gentlemen are Collaborators in the chemical investigative work at Berkeley, Professor Hoagland along chemical lines and Professor Goodspeed along histological and morphological lines.

\* \* \*

H. P. Avery of the Washington Office has exchanged places with Roy Calhoun for August and September. We take this opportunity of welcoming Mr. Avery to the Western fold and hope that he enjoys his brief stay with us.

\* \* \*

Dr. J. S. Boyce, Director of the Northeastern Experiment Station, Amherst Massachusetts and formerly Head of the Office of Forest Pathology at Portland, Oregon, writes:

"The Blister Rust News Letter arrives regularly, both to cheer me up and wise me up. In the last issue, there was a reference to fig jam! which takes my memory back to the first control camps north of Upper Priest Lake where the country had only two dimensions - straight up and straight down.

"The next time the editor of the News Letter considers. suicide (they all do, at more or less regular intervals) you can tell him he has at least one interested reader."





9





W E S T E R N   B L I S T E R   R U S T  
N E W S   L E T T E R

\*            \*            \*  
Summer Issue No. 3  
\*            \*            \*

U. S. Department of Agriculture  
Bureau of Plant Industry  
Western Office of Blister Rust Control  
Spokane, Washington





## PINE INFECTION LOCATED NEAR ELK RIVER

H. N. Putnam

On August 13, 1929 an extensive center of pine infection was discovered near Elk River, Idaho. This infection area is at the junction of Three Bear and Long Meadow creeks. There are apparently two areas of 1923 infection, the larger one about 7 chains north of the creek junction and on Long Meadow Creek. Here there are probably 100 trees with cankers of 1923 origin on a strip 2 chains wide and 6 chains long extending up the east facing slope. The smaller spot infection of 1923 origin is on the north facing slope of Three Bear Creek, about 5 chains west of the junction. Here there are probably 75 pines with infection of 1923 origin.

Infection of 1926 and 1927 origin was found for 35 chains up Three Bear Creek, 20 chains up Long Meadow Creek, and 4 chains down stream below the forks. Infection was found extending up the slopes for a distance of 6 to 8 chains.

It is estimated that fully 90% of the trees have cankers in the larger 1923 infection area, 75% in the smaller, and possibly 5% on the remainder of the area. It is probable that the infection occupies fully 60 acres.

There are probably 1500 white pine per acre, making 90,000 trees on the infected area. If 5% of them were infected, it would give us 4,500 trees infected. This is, I believe, a conservative estimate.

There are numerous very small dry draws supporting Ribes viscosissimum and R. lacustre in close association with pines. Infection occurred in these situations rather than along the rocky, narrow, steep sided canyons of the two creeks.

The abundant production of telia on R. lacustre was unexpected. Furthermore the telia on R. lacustre were long and appeared husky and viable. Those on R. viscosissimum were stocky and viable.

In the vicinity of these infected bushes scattered thru the stand, pine infection was found. Pines having cankers of 1927 origin were found where the associated Ribes species were not infected.

There are other distinctive features of this infection area as follows:

The nearest R. petiolare known is 3 miles away.

No Grossularia inermis has been found except a few scattering bushes near camp.

No concentration of either R. viscosissimum or R. lacustre

was found anywhere.

R. lacustre and R. viscosissimum will average 30 to 50 per acre on the infected area, as abundant in the stand as along the narrow, rocky streams.

Infection on both pines and Ribes species is heavier one to three chains back from the creeks than along the streams.

Infection on both pines and Ribes was heaviest in the small dry draws.

Apparently it is a region of high relative humidity. There is a combination of heat and exposed water surface here. The sides of the canyon are rocky and steep, and the water falls quite rapidly over large boulders. At 2:30 p.m. dew was still in drops on the leaves of plants in a dry draw 3 chains from Three Bear Creek.

Infection on pines and Ribes was not found over 8 chains up the side hill from the creek.

The stand is composed of trees 21 to 40 years old with scattered trees of older age classes. There is very little underbrush. The result of such a condition is the formation of a moist chamber under the overstory giving opportunity for the spores to travel and infect under favorable conditions.

#### ERADICATION ON THE CLEARWATER TIMBER PROTECTIVE ASSOCIATION

B. A. Anderson

The eradication camps on the Clearwater project will be closed about September 10. A total of 21,500 acres of white pine timber will have been protected.

The stream type on the area totaled approximately 12% of the entire acreage protected. R. petiolare and R. lacustre were found in practically every draw and seepage on the area. One of the greatest problems encountered was the distribution of chemical to the spraying crews. It was possible to supply chemical to the crews on Alder Creek between Loop Creek and Parallel Creek by car as the Big Island road runs down the Alder Creek drainage.

From Loop Creek to Camp Six, a distance of seven miles, chemical was supplied in a novel way. The Clearwater Timber Company's railroad to Beaver Creek traverses this part of the drainage. A flat car was loaded with chemical and as the train passed the pre-located mixing stations the drums of Atlacide were thrown from the moving cars. The drums withstood the rough treatment without a casualty. On the rest of the Reed's Creek area two "crowbaits" were utilized. On some of the creeks it was necessary

to back pack the chemical.

About fourteen miles of horse trails were built in order to locate side camps, etc. These trails can be utilized as emergency fire trails.

R. petiolare sprayed during the latter part of June and the early part of July, before the spring flood water in the creeks had receded, sent forth a large number of sprouts which required a respraying in August. However, not more than 400 gallons of solution were necessary to respray these areas and almost a 100% kill was secured.

We were very fortunate in having practically no G. inermis to contend with.

Seventeen tons of chemical were allotted this project and of the total amount a half drum, about fifty pounds, of Atlacide was unused. More power to pre-eradication!

And while we are on the subject here's to the men who have been in fly camps this summer. There hasn't been a single grumble from the men who have had to side camp remote areas. And when you consider that they have had to cook for themselves (even though Heinie claims to bake the best cake "you ever stuck a tooth in", Thaanum, "makes the best tea you ever hung a lip in" and Pat Anderson's (Irish?) canned beans are delicious titbits), back pack part of their supplies, and get their mail at irregular intervals they have a lot of credit due them for the success of the project.

### ADIOS

Side by side we've worked and sweated  
Side by side we've pulled and sprayed,  
As a gang we've raved and fretted  
As a crew fought fire and played.  
We've raced for our eats together  
And fought each other for our mail,  
We've come to know and like each other  
As we've hiked the long steep trail.  
We all have watched the months fly  
And now the summer's end is here,  
The time has come to say goodbye  
So long, gang, until next year.

Don Williams, Elk River Camp.

### ERRATA: ERASA AND CORRECTA

Due to a typographical error, or omission, the methods project was reported in our August issue as using 316 gallons of spray solution per acre on the Musselshell. This should have read 31.6 gallons per acre.



RIBES ERADICATION ON THE CLEARWATER NATIONAL FOREST  
JULY AND AUGUST 1939.

H. E. Swanson

The eradication work done on Musselshell Creek on the Clearwater National Forest this season has several distinctive features. In the first place, the camp consisted of a 15-man unit known as the methods project whose main purpose is to lower costs and increase efficiency in Ribes eradication. Secondly, unlike the other projects in the field, the methods project sprayed all Ribes bushes, regardless of species, in stream type where spraying was necessary, on account of the hope and assumption that a chemical will be developed which will kill all species and a method of spraying was therefore the chief concern of the project.

The Musselshell area consists of about 10 miles of stream type along the Musselshell Creek itself varying in width from 2 chains to 14 chains, with an average of about 3 or 4 chains, and the Ribes concentration running almost consistently in the medium class, except for a couple of miles in the head waters of the creek. Then there are numerous side streams, the largest being Gold Creek which is about 4 miles in length. At the close of August practically the entire drainage of the Musselshell Creek from the Ranger Station north was completed. At the close of the season, there will be left about one mile of stream type at the very head of the main fork of Musselshell Creek which it will be necessary to work from a fly camp, possibly sent in from Orofino Creek. In addition two miles and a half of Jim Brown Creek was worked from this camp.

The work was begun on July 1. The first camp was put up near the Musselshell Ranger Station. On August 3 the camp was moved five miles up the Creek,

Three methods of eradication were used on the Musselshell--power, knapsack, and hand pulling. Power spraying constituted the largest operation and an effort was made to put it on a practical basis. The power equipment consists of two motors, 2,000 feet of  $\frac{1}{2}$ -inch main line hose in 100 foot sections, 3,000 feet of  $\frac{1}{4}$ -inch lateral hose in 300 foot sections in addition to other smaller accessories. A four cylinder Pacific Marine Firefighter was the last motor used and it gave a very good run. Thirteen men are required to operate the unit, a foreman in charge, who assists with bringing up the main line hose, a main line hose man who lays out the hose upstream ahead of the operation, a mechanic who operates the motor and mixes chemical and ten men, each provided with a 300 foot lateral hose, who perform the spraying. Each nozzleman is given an individual block consisting of a 100 foot section along the stream and he works the area crosswise to the stream. There is no halt in the operation as the main line hose is continually brought up from the rear and another block is ready for each man on the

completion of a section.

The area which was worked by power is the first seven miles of Musselshell Creek which constituted the heaviest concentration and also the widest area. This required 370 man days and 10,893 gallons of chemical. The acreage sprayed represents 270 acres, or 1.4 man days and 40.3 gallons of chemical per acre. The results together with a general observation of the work and conditions indicate that power spraying is well adapted to extensive areas as represented by Musselshell Creek. On the other hand, for the heavier concentrations on areas which are probably not so extensive as Musselshell, there is a possibility of a power unit, half as large as our present one, proving practical. In case of serious motor trouble which would cause loss in time, the men were divided into crews and proceeded to eradicate the side streams flowing into Musselshell. This represents a means to avoid loss of time on any area. However, there were only three instances when this was necessary during this past season.

Knapsack spraying was done in the lighter Ribes concentrations on Gold Creek, on about one mile along the upper Musselshell and one mile on a fork of Jim Brown Creek. The method used was the same as developed last year and which was employed in all the projects this season. Ninety-nine acres were sprayed by knapsack method, requiring 78 man days and 1,464 gallons of chemical or C.8 of a man day and 15 gallons per acre.

The Ribes in the headwaters of Musselshell, Gold and Jim Brown creeks in addition to all the side streams, were eradicated by hand pulling. This acreage constituted 329 acres with 56,605 Ribes, and required 116 man days, or 0.3 man days and 172 Ribes per acre.

Although there has been considerable improvement in both methods and equipment over the pioneering stage of the 1928 season, there is still room for further development. Along with the efforts to demonstrate the practicability of the power unit, this project has found certain weaknesses in the knapsack equipment, which no doubt were the more noticeable on the other jobs. Minor changes in the construction of this equipment will remedy these faults. There were tried out by the knapsack crews in this camp, two collapsible canvas buckets as mixing containers. These buckets have a 10 gallon capacity. Their lightness and compactness made them very desirable and much preferable to the bulky wash tubs. Although their use was confined to only 15 days of spraying, they have proved very durable and warrant the use of a larger number next season.

This brief resume of the work at Musselshell covers the period of July and August. During that period 9,840 acres were protected. The operations closed on September 6 at which time the acreage protected was well over the 10,000 mark.



## THE SONG OF THE PLUMAS

In the mighty Plumas Forest  
In the State of California  
Worked a crew of Ribe diggers  
Ribe diggers of the Forest.

All were strong and tough of sinew  
Boldly faced the largest Ribes  
But the greatest was the Camp Boss  
Good old Camp Boss - "Rabbit" Miller.

Thru the pines they swept like wildfire  
Searching out each hidden Ribe  
Till at last they reached a gully  
Gully full of giant Ribes.

There like oak trees grew the roezli  
Higher still rose nevadense  
Twined inermis thru the branches  
Branches of the tallest pine trees.

"Up and at em" cried the crew boss  
"Tear them out with speed and vigor  
Every bush must be uprooted  
Piled on high and left to wither".

Like thunderbolts the picks descended  
Crashing downward came the hodags  
Yet their efforts all seemed futile  
Futile and availing nothing.

In despair they sent for tractors  
Donkey engines - Caterpillars  
Chained them tightly to the Ribes  
But their work was vain and wasted.

Still undaunted by their failure  
Blasting was the next suggestion  
But the Ribes still resisted  
Would not leave their earthly moorings.

Now it chanced that mighty "Rabbit"  
Chasing crews as was his habit  
Came upon the puzzled workmen  
Workmen who at last seemed conquered.

Angered by the workmen's failure  
"Rabbit" siezed a heavy hodag  
Swung upon the largest Ribe  
Largest Ribe in the gully.

Huge it was and deeply rooted  
At the base were yellow jackets  
In the top a nest of hornets  
Hornets ready to do mischief.

Downward crashed the mighty hodag  
Upward rose the yellow jackets  
Downward swarmed a cloud of hornets,  
Swarming out to sting our "Rabbit".

Passed from view the hardy worker  
Buried in a cloud of insects  
Still there sounded blows unceasing  
Blows which reassured the watchers.

In despair the insects vanished  
Baffled by the "Rabbit's" toughness  
Weakened and with broken stingers  
Stingers by his tough hide thwarted.

Deeper dug the hardy camp boss  
Disappeared among the rootlets  
Upward flew the dirt and boulders  
Flung as from a great volcano.

Then at last there came a tremor  
Every branch was set aquiver  
Slowly fell the giant Ribe  
Crashing like a mighty Redwood.

Heartened by his mighty efforts  
To the fray the men rushed gladly  
Thus began the epic battle  
Epic battle of the ages.

Up the gully swept our "Rabbit"  
Like a whirlwind of destruction  
Not a Ribe could resist him  
Could resist the mighty "Rabbit".

In a pile they stacked the Ribes  
Till it rose above the mountains  
Down the gully flowed a river  
River made of perspiration.

Onward swept the crew like wildfire  
Now inspired by "Rabbit's" efforts  
Not a bush could stand before them  
Could withstand their lusty onslaught.

When at last the work was finished  
All about was desolation  
Pitted was the ground with craters  
Pitted like a field of battle.

"Rabbit" also hurried onward  
Over hill and dale he clambered  
Ready now to start in working  
Giving other crews assistance.

K. H. Jarvis - D. Condit  
Camp #1. California

### BLISTER RUST BOYS PLAY ELK RIVER

The Elk River Blister Rusters, with the aid of a few Bovill Camp boys, gave the countryside a large surprise by beating the Elk River town baseball team 15 to 8.

Although the boys had never played together before nor had any practice, they started out by making four runs in the first inning, and continued playing a good game.

Roy Lundberg tossed the pillet for the first six innings, and Mohawk Sterba of the Bovill camp pitched the remainder of the game.

Willie Flynn gave an exhibition of big league catching. He also knocked a three base hit and tried to stretch it for a home run but his calk boots and tin pants were not to his advantage.

Nedros made a spectacular shoestring catch in left field staying off the desperate rally of the villagers.

It would take a large portion of the New York Sunday Sport section to tell of all the good plays, but all did exceptionally well under the circumstances.

Talk about excitement, Bill Guernsey broke half the teeth out of his pocket comb, while the elevated town wit gave a solo pep rally.

The game was called off a couple of times. Once to get a few R. lacustre in the outfield, and when a collegiate looking Ford stalled in the baseball diamond.

---

The country around Meadow Valley California, where the Blister Rusters work, is very generously supplied with yellow jackets of a most potent stinging ability. No sprinter ever got a faster take-off than a Ribe-digger who has stumbled on a yellow jacket nest unawares. With a whoop and a few carelessly chosen cuss words he booms away in full speed mindful of nothing but distance.

## CALIFORNIA RIBES ERADICATION

During the summer of 1929 the two camps in California have eradicated 3,085.3 acres of sugar pine type. 318,304 Grossularia roezli, 99,756 Ribes nevadense and 16,047 G. inermis, or a total of 434,107 Ribes (140.7 per acre) were forcibly uprooted.

Stream type does not play the important part in the California work that it does in the Idaho eradication. A high degree of protection can not be provided by the removal of abundant highly susceptible Ribes along streams. They simply do not come that way. Ribes are just as abundant, or more so, in some timber and brush types as along the infrequent streams. Practically all of the area was covered by hand pullers.

The Ribes are large and well rooted. To try to pull them without the judicious use of a hodag on each bush is to get nowhere very quickly. And the brush! While they do not have the dense undergrowth and thick brush found in Idaho, they have large areas of spiny ceanothus and manzanita, the chief offenders against the blister rust's equanimity and imperturbability, in which Ribes grow sometimes quite abundantly and thru which even a tortuous route via the thinner spots is pursued with difficulty. Yes sir! working some of those areas is a man-sized job. As Benny says in a recent letter, "You may tell the press for me that altho we haven't covered much acreage nor slain millions of Ribes we have sure worked like Hell for what we've got. That, in a nutshell is a good description of our working conditions". All of which may not sound like our Benny but its the truth. And in what manner!

## THE LOOKOUT'S MISTAKE

W. V. Benedict

Early one morning up at the Rock Creek Camp, Baxter was burning out the can-hole. To facilitate the burning and insure a sanitary job he dumped in a large order of  $\text{NaClO}_3$ . There was no wind and large quantities of heavy dark smoke went spiraling above the tree tops.

A few minutes later the telephone buzzed at the Meadow Valley camp. The Spanish Peak Lookout was reporting a fire in the NW $\frac{1}{4}$  of the NW $\frac{1}{4}$  of Section 31. This seemed strange, for in this quarter section the Rock Creek Camp was located. I immediately called Baxter to the phone and informed him there was a fire reported near his camp and gave him the location. Baxter stalled along for awhile apparently perplexed; then a series of ha ha ha's came to me over the wire.

And he sighed and I sighed, side by side on the mountain side- - -  
'Twas a good one on the lookout, the Forest Service and us.

California.



RIBES ERADICATION ON POTLATCH TIMBER PROTECTIVE  
ASSOCIATION  
C. C. Strong

Ribes eradication on the Potlatch Association began about June 15 with a certain amount of preliminary work having been done as early in June as weather conditions would permit. Due to the snow not having melted from areas to be worked until nearly June 1, it was possible to do only partial pre-eradication. Hence it was with a certain degree of apprehension that the job was tackled.

The areas originally chosen to be protected during the 1929 field season were:

1. The portion of the East Fork of Potlatch Creek drainage not worked in 1928. This area comprised about 12,500 acres.
2. Gold Creek drainage east of Elk River largely in T. 40 N., R. 3 E. Boise Meridian, comprising about 13,500 acres.
3. Deep Creek drainage southeast of Elk River comprising about 8,000 acres.

As the season advanced it became evident that the areas originally selected for working would not hold the crews the entire period. It was decided that the balance of the season should be utilized to clean out as much of the Long Meadow Creek drainage as possible.

In general, the Gold Creek and Long Meadow Creek areas were the least difficult ever tackled from the standpoint of protecting white pine from damage by the rust. Altho many Ribes were removed, working conditions were less severe and the number of bushes present per acre was far less than on other areas. Furthermore, there was very little spraying necessary on the two areas.

The area on the East Fork of Potlatch Creek was by far the most difficult to protect. Not only were there more Ribes present but there were extensive areas of R. petiolare to be sprayed. The Deep Creek area was similar to the Potlatch Creek area.

The three areas originally intended for eradication in 1929 were completed. They comprise a total of about 34,000 acres. In addition about 25,000 acres of the Long Meadow Creek drainage was completed. This does not include some 400 acres of hillside area surrounding the pine infection at the mouth of Three Bear Creek in the Long Meadow Creek drainage, from which all Ribes were removed.

It is interesting to note that the two pine infections found were on areas eradicated this season. In fact it is not unreasonable to suppose that the rust might not have been found had it not been for the activities of eradication and checking crews while securing the necessary advance information on which to plan operations.

## AN ANNUAL EVENT

Notwithstanding the fact that eight of the members of Peterson's crew were absent from his camp for a period covering three meals each (24 man meals) over the weekend of August 18 it is feared that Pete's meal costs for the season will be high. On a trip made to Pete's camp on that date it was demonstrated that 4 female clerks of the Spokane Office together with 1 husband can consume quantities of steak, potatoes, salad, etc., (to say nothing of cake, coffee and lemonade) to the extent that Pete's meal records had perhaps better show that the 8 men remained at camp, instead of showing that 5 visitors were entertained for two meals each.

Our heartiest thanks to Pete and the cook for the royal feed.

M. L. McWold

"Lordy! Lordy! Lordy! How those women can eat!" - Pete

## MORE OREGON INFECTION

*Mr. Goodding* reports "Inspection showed infection on Ribes well scattered to the south of the white pine portion of the Still Creek planting but within the main boundaries. One piece with several juvenile cankers on it was located in the southwest portion of the planting.

"Blister rust has been found quite generally distributed on the Ribes in the Clackamas River region. One infection was found on Devils Creek on the Santiam watershed. This marks a step farther south in its aggression. One infected tree was located on Salmon River (Clackamas County). This represents the farthest point south for known pine infection in Oregon." *It is rapidly spreading toward California*

## THE TRAGEDY OF NEWMAN LAKE

R. E. Myers

Homo sapiens is not the only animal who is occasionally the victim of his appetite.

One fine squirrel lost his life while attempting to satisfy a craving for blister rust canker tissue.

Said squirrel was hanging by his teeth which were entangled in the folds of cheesecloth tied around a stem canker on a pine tree at Newman Lake.

Ed Joy and the writer set the trap (unknowingly). Fred Joy and the writer found the corpse 2 months later.

The tree was bent over at an angle of about 30° from vertical. The remains are available for Doubting Thomases to observe.



## RIBES ECOLOGY STUDIES IN IDAHO 1929

W. A. Rockie

Studies of Ribes ecology in Idaho have been along varied lines during 1929.

Our controlled plot studies and other permanent field investigation experiments have been examined at regular intervals. At the beginning of the field season, the young Ribes plants were marked by individual metal stakes on the ground and these have been examined at intervals of about two weeks during the spring and summer months. These examinations will be continued during succeeding years.

A summarization of these records will, after a period of several years, give an accurate chronological account of the life history of a large number of Ribes plants of the several species.

A rather detailed study of several logged areas in the Clearwater region of Idaho was initiated during the present year. This study was made to determine exactly what changes in soil and in growing conditions, are brought about by the several types of logging. The study is four-fold, including studies of soil temperature, soil moisture, soil acidity and light.

The soil temperature under the duff is recorded at 15 minute intervals during the day on virgin timber stands, on all degrees of partially logged stands and on areas where clear cutting has been done. This work is done with thermocouples and galvanometers.

The soil moisture is also determined for each spot where the soil temperature was measured. This is necessarily done in the laboratory drying ovens at the University of Idaho.

The pH readings (acidity and alkalinity) of these same selected sites is likewise measured, these records being taken on a quinhydrone potentiometer. The relative amounts of light reaching these same spots is also measured at hourly intervals during the day by means of a potometer.

From this completed data of temperature, moisture, acidity and light it is hoped to learn the effects of the various types of logging upon the succeeding growth of Ribes. These data, with the various facts which have been gathered in previous years, all point to a common end, namely, a more specific knowledge of the habits and characteristics of Ribes.

More effective suppression and control of Ribes can be materially aided by a more intimate knowledge of these plant habits and characteristics.

## ANDERSONIANS FROM HEADQUARTERS

While Peterson can boast of the doubtful honor of having the largest pair of feet in his camp on the Coeur d'Alene, Camp #1 at Headquarters claims to have the youngest Blister Ruster on the Western forces. Allen Owyen was three months old when he first tugged at gooseberries.

---

Lew Lovegren sank into a beaver swamp with a loaded tank on his back. But for the timely aid of Fritchman he would probably be wearing a pigtail by now. As Fritz hauled him to safety Lew's feet came out of the oozy mire with a resounding smack. "Just like a kiss over the Vitaphone" gasped Lew.

---

The hot dry season has been ideal for hornets and yellow jackets. Not a day passes without several of the men being stung by a vicious yellow jacket or a belligerent bald-faced hornet. At the present time Bob Martin is nursing an arm twice its natural size, Herman Anderson just left for home with a face resembling that of a Clearwater logger after an evening in Pierce, Lee Moore has an eye swollen shut, Ed Joy is stung in various and sundry places, Dick Cannon chalked up his 35th sting and I'm knocking on wood. The old saw about "it's an ill wind that blows nobody good" still holds. The men carry raw onions which when rubbed on stings seems to afford immediate relief. A worried camp boss is able to locate his crews within a radius of a mile by simply sniffing the atmosphere. Two crews in the same canyon exude a stench similar to that of a garlic eaters' convention.

---

Our packer finished on September 4th. We were sorry to see Walt leave with his two "crowbaits" or "willertails" as Onstot says. Yes sir! There were two of the best pack animals on the Clearwater! Walt used to tie a blanket around the one to keep the hay from falling out between its ribs and the other had the heaves so bad he used to stop and pry its mouth open every half hour so it could get some air.

---

## WHAT HAPPENED TO FRITCHMAN AT HEADQUARTERS

Irate crew foreman pointing to a three-inch Ribes seedling missed by a crewman, "What's the matter with your eyesight, are you going blind? Keep your mind off her once in a while!"

Down-trodden crewman, "Yeah, I know I'm getting terrible. They'll be making a foreman out of me pretty soon."

### NEW METHODS OF ERADICATION SUGGESTED

1. It is suggested that all flora (and if possible fauna) be fireproofed by some appropriate means and the Ribes then burned.

2. The crowns of the Ribes roots could be coated with honey. Bears would be attracted and in endeavoring to secure the honey they would wreck the plant completely.

3. Crews carrying hand cranking magnetos could by connecting the two extremities of the plant to the magnetos and turning the crank, electrocute the Ribes.

Phil Joray  
Honeysuckle

### NOTES

H. P. Avery returned to Spokane on September 13 from a visit to the California projects.

\* \* \*

Congratulations! to Mrs. and Mr. Simcoe on the arrival of a boy.

\* \* \*

J. L. Bedwell left on September 11 for Yale University to continue post graduate studies.

\* \* \*

Early in August Rene d'Urbal set out to explore the glaciers of Mt. Hood. We do not think that he was lost; just wandered too far afield. When he saw that he could not get back that night he kept on taking pictures of glaciers and flora of those parts, then gave his attention to the return trip. After a disagreeable experience, he arrived at camp the next day under his own power, tired but O.K.

In answer to a query re his expense account d'Urbal sent the following telegram to the Office, at his own expense:

"Leave August 6 respectfully requested impossible to report for duty stop had unexpected free lodging on Hood August 5 stop meals supper five two dinners six not available stop press has made me California faculty also chief Oregon blister rust and Goodding member of crew apologies and best regards".



10







W E S T E R N   B L I S T E R   R U S TN E W S   L E T T E R

\*     \*     \*  
Confidential  
\*     \*     \*

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U. S. Department of Agriculture  
Bureau of Plant Industry  
Western Office of Blister Rust Control  
Spokane, Washington



## RIBES WITHOUT SOIL

R. P. d'Urbal

A vast number of plants have been grown successfully in water solutions; grains, vegetables, flowers, fruit trees and conifers respond nobly to the treatment. Specialists in nutrient solutions, especially those gifted with a large visionary and prophetic outlook see the future urbanized farmer growing succulent vegetables on his roof with the aid of special pills and culture troughs. Another vision is that of the sophisticated coolie growing wheat on his barge on the Yangtse Kiang.

Ribes respond well to water culture. Ribes petiolare seedlings planted in October and properly "forced" by artificial illumination grow rapidly. By Christmas they will overtop by several inches the miniature of verdure generally used as a table centerpiece - the disgraceful vestige of a Christmas tree.

At the Berkeley greenhouse the four northern species, R. petiolare, R. lacustre, R. viscosissimum and Grossularia inermis are being grown in nutrient solution, in gallon jars. Fifty jars are used for each species. Each jar has its quota of 3 seedlings which are loosely secured in holes in the cork stoppers with cotton plugs. An extra hole is provided for aeration and for the addition of iron solution.

The solution in which the plants are growing is quarter strength Hoagland solution. This is conveniently prepared by adding a small volume of strong solutions of potassium and calcium nitrate, magnesium sulphate and potassium acid phosphate to a large volume of distilled water. An addition of "A to Z" solution furnishes other elements which are necessary in traces. Iron is rapidly exhausted and is therefore added every week.

During the short winter days artificial illumination is provided by a battery of 500 watt lamps equipped with large reflectors.

This year a special table has been set up for experimental solutions. Observations last year indicated that R. petiolare thrived best in dilute solutions. As soon as results are apparent, each species will be grown on its pet mixture.

This year all jars are being embedded in moist Spaghnum moss. This will keep the solutions cool, and do away with root injury experienced last year during hot spring days. We fondly hope, too, that the moisture will prove distasteful to the voracious red spiders which made severe inroads into our material last year. An automatic watering system is being installed to facilitate replenishing and changing solutions.

## RESULTS OF SCOUTING IN THE INLAND EMPIRE 1929

Scouting for blister rust during the 1929 season has revealed the presence of four centers of pine infection in North Idaho, two of which have been reported in previous issues of the News Letter. These are the two infection centers in the vicinity of Elk River, Clearwater County, one at the junction of Elk and Deep creeks where five infected trees with five cankers of 1923 and 1927 origin were found, the other at the junction of Long Meadow and Three Bear creeks where an extensive infection area was located, comprising 60 acres of white pine with approximately 5% of the trees infected. Here, there were apparently three waves of infection, in 1923, 1926 and 1927.

A third center of pine infection was found in Clearwater County  $1\frac{3}{4}$  miles south of Headquarters, Idaho, on the North Fork of Reed's Creek. Fifteen infected trees with 23 cankers of 1927 origin were located. All infected trees and those nearby were destroyed on September 13. The Ribes in this vicinity were eradicated by the application of chemicals during the 1929 field season.

The fourth center of infection was discovered by the blister rust prospectors in sections 8 and 11, T. 42 N., R. 2 E., on the Middle Fork of St. Maries River in the Clarkia region, Shoshone County. In section 8, ten infected trees were found with ten cankers, one of 1923 origin and nine of 1927 vintage. In section 11, thirty infected trees were located with 77 cankers which originated in 1927.

Ribes infections were found in the vicinity of all pine infection with the exception of the Headquarters find on an eradicated area. In addition, Ribes infection was discovered at six points distributed over Clearwater County and at two points in Latah County in the vicinity of Bovill, Idaho.

In Montana, one infected bush of R. petiolare was located in Mineral County on Upper Randolph Creek about 9 miles airline from the Savenac Nursery at Haugan. The bush was uprooted and all infected leaves destroyed by burial in the soil.

### BLISTER RUST CONTROL IN ITS RELATION TO MANAGEMENT PLANS

W. G. Guernsey

In making a management plan for any national forest in the Inland Empire with sufficient white pine stumpage to warrant protection it is essential to incorporate data on blister rust control.

It is a common practice in handling forest finances at the present time to make a charge of a certain nominal sum per acre to



defray expenses.

In the case of blister rust control it is my belief that the charge for Ribes eradication should be per thousand board feet of lumber produced, this expense occurring only two or three times during the rotation and not of yearly occurrence. Fire protection, of course, must go on from year to year and can be charged off as a per acre charge during the rotation.

The following table gives the practical information on several logging units of the Lakes Working Circle, Coeur d'Alene National Forest which was eradicated in 1928:

TABLE GIVING COSTS OF RIBES ERADICATION PER 1,000 BOARD FEET OF TIMBER  
ACCORDING TO U. S. FOREST SERVICE CRUISING FIGURES ON THE LAKES  
WORKING CIRCLE, COEUR D'ALENE NATIONAL FOREST.

Logging Unit	Timber Cruise in 1000 Bd.Ft.	Volume White Pine in 1000 Bd.Ft.	Volume Other Species	Volume White Pine Seed Trees Left	Total Volume White Pine Avail-able	Approx-imate Stumpage Value at \$10 per M.	Number Acres in Drain-age	Cost per Acre Eradicat-ed Once	Cost per M. Bd.Ft. of White Pine
Picnic Creek	17,807	5,371	12,436	537	4,834	\$ 48,340	2,440	\$ 1.22	\$.615
Nicholas Creek	18,607	10,234	8,373	1,023	9,211	92,110	1,960	2.40	.512
Barney Creek	31,150	12,460	18,690	1,246	11,214	112,140	2,380	3.21	.691
Total	67,564	28,065	39,499	2,806	25,259	\$252,590	6,780	\$2.26	\$.607

The above table gives the volume of timber on a thousand feet board measure scale.

The volume of white pine seed trees on the area was subtracted from the total merchantable white pine available at present because of loss in wind throw, fire, insects and the possibility that it might prove impractical to log the seed trees.

The charge of Ribes eradication on the area was made against the white pine stumpage, the reason being apparent in that the other species are immune to blister rust and would suffer no loss.

The cost of \$2.26 was the Ribes eradication charge per acre on the several drainages. Comparing this with a cost of \$.607 per M. board feet of lumber and an income of ten dollars per thousand brightens the outlook for blister rust control on a managed forest.

SUMMARY OF RIBES ERADICATION IN IDAHO  
SEASON OF 1929

Type of Work	Location	Hand Eradication		Chemical Eradication			Area Protected	
		Acreage	Acres per Man-day	Ribes per Acre	Acreage	Acres per Man-day		Gallons of Spray per Acre
Stream type eradication	Clearwater T.P.A.	481.8	.52	*	924.1	.63	26.0	21,500
Stream type eradication	Potlatch T.P.A.	2,918.0	.76	268	173.1	2.18	40.0	57,010
Stream type eradication (Methods study)	Clearwater N.F.	373.0	2.73	176	369.0	.82	33.5	11,150
Total		3,772.8	1.15	257**	1,466.2	.65	29.0	89,660
Stream type re-eradication	Bovill	123.7	1.12	513#	95.6	.91	9.0	10,000
Extension of 1928 area	Bovill	113.2	.97	--	--	--	--	--
General re-eradication	Coeur d'Alene N.F.	5,384.3	8.52	45##	20.4	.65	49.0	5,405
Grand Total		9,280.8	2.24	151	1,582.2	.65	29.0	105,065

\* Figures for Ribes pulled include those pulled on sprayed areas.

\*\* Based on Potlatch Timber Protective Association and Clearwater National Forest only.

# Of these, 68% were seedlings, 11% sprouts and 21% missed bushes.

## Of those, 86% were seedlings, 2% sprouts and 12% missed bushes.

## DAMAGE TO PINE PLOT STUDIES

The personnel of the scouting, damage to pine and checking projects, Putnam, Joy, Myers, Chapman and Staat, are at present on the Coast gathering further data on the damage to pine plots.

The areas on which work was commenced were the two plots established for the purpose of studying the relative susceptibility of Pinus monticola and P. strobus in the West.

One of these plots is located at the Merrill and Ring Lumber Company headquarters at Pysht, Clallam County, Washington. Here a mixture of P. monticola and P. strobus was planted in three rows, three feet apart. G. divaricata, R. bracteosum and R. laxiflorum are growing 25 to 300 feet from the pines. This plot was established in May 1928 and re-examined in October 1928. It was found that infection originated in 1923 and was followed by a main wave of infection in 1926. A few cankers of 1927 origin were found.

The second plot, the Buck Creek Plot, is located on the Stillaguamish River on the Snoqualmie National Forest in Snohomish County, Washington. In 1910 the Forest Service planted both P. monticola and P. strobus here. R. bracteosum and R. lacustre are abundant on one side of the plot which was established in June 1928 and re-examined in October 1928. Infection occurred in 1923 and was followed by a wave of infection annually.

The measuring stick used in comparing the two species of pine consists in an estimate of the number of feet of needle stem of each species. Indications so far point to the fact that P. monticola is much more susceptible to blister rust than P. strobus, having twice as many cankers per tree and approximately 3 times as many cankers per 1000 feet of needle stem as P. strobus.

On the completion of work on these plots the party will separate into two groups, one group going to Cheekye, B. C., and one to the infection centers at Spirit Lake, Washington and in Oregon.

The Cheekye Plot is well known. Most of us have visited there with varying degrees of pleasure or displeasure. The planted pines will be re-examined. These pines were planted in 1926. In 1927 the survival was 83.26%, in 1928, 82.74%.

The Spirit Lake Plot is located in Skamania County near Mt. St. Helens on the Columbia National Forest. It is on the Toutle River three miles west of Spirit Lake. Here R. bracteosum, R. lacustre, R. sanguineum and R. laxiflorum are found. One pine canker originated in 1918 or 1919. There was apparently a heavy wave of infection in 1925, followed by infections annually.

The purpose of this plot is to investigate the development of the



rust where pines are closely associated with an abundant growth of Ribes in a region representative of the western white pine belt in the Cascade Mountains of Washington and Oregon. This investigation includes the development of a basis of measuring pine infection and a study of killing cankers on trees of various sizes.

Following an examination of this plot "Put" and his colleagues will establish permanent study plots in the pine infection centers of Oregon.

### PRE-ERADICATION IN IDAHO, 1929

C. C. Strong

The above title perhaps needs a bit of an introduction, having come into the blister rust vocabulary but two years ago, almost a total stranger. Since that time those most concerned with Ribes eradication have come to look upon this newcomer as a trusty ally. Other members of the blister rust force, having obtained only fleeting glances of the gentleman in question, may or may not have more than a vague conception of his doings or importance.

Pre-eradication is just what the word implies. In short it embodies all the work done upon an area, previous to the removal of Ribes, to furnish information needed for planning that operation. Data taken by reconnaissance crews, although by no means all that is needed, is a valuable adjunct to pre-eradication. Information needed for planning Ribes eradication on a given area and secured by pre-eradication surveys, is as follows:

(1) Percentage of the total area falling into each eradication class.

(2) Classification of stream type (where the bulk of Ribes are found) into light, medium and heavy hand pulling and light, medium and heavy spraying classes with the acreage of each.

(3) Location of camp sites and division of the entire area into convenient working units.

(4) Location and mapping of roads, trails and other improvements which will facilitate transportation of supplies and equipment and traveling of men to and from work.

(5) Finding of existing Ribes or pine infection centers. This may have a decided influence on where and how the infected area is to be worked.

Obviously it is not practical or even desirable to cover 100% of the area on pre-eradication. To do so would result in a cost far in excess of the present cost of such work, approximately one-half cent per acre. In general all main streams and the larger tributaries are

completely covered. All the other tributaries are mapped and some of them examined. The above applies only to stream type pre-eradication which is the only type of pre-eradication which has been done during the past two seasons.

Pre-eradication is done by the permanent personnel of the Ribes eradication project aided by a few well qualified temporary employees when necessary. A crew averaging five men was engaged in the work this fall from September 12 to October 10.

The work just ended was confined to the three general regions upon which eradication of Ribes is proposed for the field season 1930. They are: Clearwater and Potlatch Timber Protective Associations and the Clearwater National Forest. 37,000 acres on the Clearwater Association area, 102,000 on the Potlatch Association and 135,000 on the Clearwater National Forest were examined. This is a total of 274,000 acres.

Trails are of little use to men engaged upon pre-eradication. In fact they are sometimes an aggravation because a man must take to the brush to get first hand information and actually walk, slip, slide or fall over the area in order to really see (or feel) it and know what the conditions are. To have to do this knowing there is a good trail only a few chains back in the timber from the stream being worked is not conducive to purity of mind. Fortunately there is always plenty of room and opportunity for "voicing one's opinion" in no uncertain manner without anyone near to take offense.

Here's a health to Pre-eradication!

#### EDUCATIONAL DEMONSTRATIONS

Root reports that blister rust demonstrations were put on at the Los Angeles County Fair at Pomona, California and at the Riverside County Fair at Riverside, California. Backus and Beeson of the black currant eradication project were in charge of both demonstrations. The motion picture film was shown at Pomona before a combined audience of 3000 people and at the County Fair at Riverside before 1200.

In Idaho, demonstration booths were placed in the Bonner County Fair at Sandpoint, September 26-28 and in the Clearwater County Fair at Orofino October 3 to 5. Specimens of the disease on pine and Ribes, large trunk cankers in glass jars, posters and enlarged photographs made up the demonstration. In addition a series of lantern slides was shown.

It was felt that the work with the small county fairs was more profitable than with the larger fairs. The people have more time to stop, look and listen and they are interested.



## MUCH ADO ABOUT O.

We have some nebulous notion that sometime in the past we were drawn into an inchoate argument as to whether the word "data" should be used as a singular noun (collective) or whether each one of several, or several thousand, data was considered in the mind of the speaker or writer making the noun plural. The argument did not develop. Its early demise came with the statement that all the best scientific writers used the word as a plural noun, a statement uttered with an air of finality and superiority which effectually silenced us laymen. It was the common practice in scientific writing and that was that. There was nothing left to do but to wonder why.

All of which is occasioned by this statement in paragraph 2 of the article on Idaho pre-eradication in this issue: "Data taken by reconnaissance crews - - - is a valuable adjunct to pre-eradication." Perhaps, our proof reader should have altered this to read "Data taken by reconnaissance crews - - - are valuable adjuncts to pre-eradication". But no - he couldn't do it. "Data are valuable adjuncts"! - He - e - e - ll!

## IMPORTANT DISCOVERY OF RIBES INFECTION IN OREGON.

On September 24, Root and Harris discovered Ribes infection at two points in Curry County, Oregon, about 7 and 15 miles, respectively, south of Port Orford. This represents a substantial extension in the southward spread of the disease on the Coast being less than 50 miles from the Oregon-California line.

## NOTES.

H. P. Avery left Spokane September 29 to return to his duties in the Washington Office. Come again, Avery. We enjoyed your visit.

\* \* \*

Tom Harris left on October 14 to take up a fellowship at the University of Idaho.

\* \* \*

The wanderlust has struck Anderson. He and McLaughlin have left for Peru on the first stage of a globe-encircling tour. Andy has been made a Collaborator and carries an official scroll signed by the Secretary of Agriculture. They are not out to beat the record of Collyer and Mears but Andy expects to be on the job when the chemicals start flowing next year.

The Plant Quarantine and Control Administration is now responsible for the daily sustenance of several of the boys. Three inspection points have been opened; Peterson is on the job at Portland, Oregon, Simcoe is looking them over at Seattle, Washington while Ganoung and Whiting are dividing the arduous duties at Spokane, Washington.

\* \* \*

Frank Patty has taken furlough to commence post graduate work at Oregon State College.

\* \* \*

Al Lanigan and Razz Matson, cook and flunky at Guernsey's camp, returned to Spokane at the end of the field season and opened a cafe on Sprague Avenue. When in Spokane, eat at the Blister Rust Cafe. Yes Sir, that's what they call it. Incidentally, they are doing a rushing business.

\* \* \*

Mrs. E. M. Jump has been appointed as a clerk in the Spokane Office, effective September 16, 1929. She is assisting Miss McWold in making sure that the ghost takes his periodic stroll.

\* \* \*

The young man's fancy didn't turn so "lightly" in the Spring of 1929. And great was the Fall thereof.

On September 17, the wedding of H. R. Offord and Miss Lenore Glen was solemnized at Berkeley, California.

On September 23, D. R. Miller and Miss Edna Hedlund were married at Brownsville, Oregon.

On October 10, Miss Leona Brennan became the bride of J. F. Breaky at Spokane, Washington.

It is rumored that several more of the boys are following the good example later in the year, in fact, it is more than a rumor.

Congratulations! Gang!

It is with deep regret that we have to announce the postponement of Peterson's wedding on account of the illness of his fiancée. Here's wishing the lady a speedy and complete recovery Pete, old boy.









W E S T E R N   B L I S T E R   R U S TN E W S   L E T T E R

\*     \*     \*  
Confidential  
\*     \*     \*

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U.S. Department of Agriculture  
Bureau of Plant Industry  
Western Office of Blister Rust Control  
Spokane, Washington



A PRELIMINARY STUDY OF TWO IMPORTANT  
PINE INFECTIONS IN OREGON

H. N. Putnam

At the present time there are two well established pine infections known in Oregon. These are: (1) Eagle Creek,  $5\frac{1}{2}$  to  $7\frac{1}{2}$  miles south of the Columbia River Highway, northwest of Mt. Hood, Hood River County, Oregon, T. 1 N., R. 8 E., Secs. 6, 8, 9. (2) Rhododendron region in Multnomah County, southwest of Mt. Hood, along Zig Zag River and its tributaries, from near Brightwood east 5 miles, T. 2 S., R. 7 E., Secs. 29, 30, 31, 32, 33, and T. 3 S., R. 7 E., Secs. 2, 3, 4, 11, 12, 13.

This paper deals with a preliminary study of these two areas made by E. L. Joy, R. E. Myers, C. M. Chapman, F. F. Staat, H. N. Putnam, in cooperation with L. N. Goodding and M. C. Riley. There follows a description of work done and results accomplished on each area.

Eagle Creek Area

History of Infection. Pine infection here was found for the first time by Lyle on September 16, 1929. Ribes bracteosum was found in the general vicinity, in 1927, and on Eagle Creek in 1928. It was further examined on October 18, 1929, by Goodding and Putnam.

General Situation. The area of infection lies along Eagle Creek for a distance of two miles. The apparent center of infection is on an alluvial fan on the east side of Eagle Creek seven to seven and one-half miles from the Columbia River Highway, and is reached by trail. The area supports an 11 to 20 year old stand of Douglas fir with scattered white pines present.

Ribes Conditions. No concentrations of Ribes were found on or near the area. There are scattering R. bracteosum bushes along the creek, but not in abundance. R. sanguineum was found distributed among the pines, but not in great amounts. The bushes were from 10 to 50% defoliated. One R. bracteosum was found with 5% of its leaves infected out of 15 bushes examined. No infection was found on 25 R. sanguineum examined.

Pine Infection. There were 50 pines examined, 10 of which were infected. An analysis of 13 cankers on 6 trees showed that probably infection originated in 1925 or 1926, with a secondary wave apparent in 1927. The infected pines were not particularly concentrated in the immediate vicinity of R. bracteosum, but were scattered from 50 to 600 feet distant.

Recommendations. It is believed that a worth while study of the value of stream type eradication in Oregon could be made here by the removal of R. bracteosum and the establishment of a permanent study plot possibly 5 chains wide along the creek and 15 chains long extending up the slope at right angles to stream flow. Pines and Ribes should be plotted

•

## Rhododendron Area

History of Infection and Work Done. In September, 1928, infection both on pines and Ribes species was found in this region for the first time by Goodding and assistants. In April, 1928, Goodding and Putnam re-examined the area and found a large number of young cankers of 1927 origin developing. In October, 1929, an intensive study of the area was made by the group already mentioned. Strips 2 rods wide were run across the valley. There were 19 such strips put in, 20 chains apart, covering an area  $4\frac{3}{4}$  miles long. Data were taken on location of host plants, streams, Ribes species, size, infection, pines, age, height, crown class, number of cankers, etc.

General situation. In this region there are several good sized streams flowing almost parallel in the same valley. Still Creek, Camp Creek, Henry Creek and Zig Zag River, occupy the same general valley at Rhododendron. White pines 31 to 40 years old occur growing mostly as suppressed individuals under an overstory of Douglas fir, cedar, and an occasional white pine. The pines are mostly limited to the valley floor and the strips were run only within the limits of white pine growth.

There follows statistics derived from the data on all of the strips considered together:

Length of valley covered.....	4 $\frac{3}{4}$ miles
Number of strips 20 chains apart.....	19
Width of strips.....	$\frac{1}{2}$ chain
Average length of strips.....	37 $\frac{1}{2}$ chains
Acres in strips.....	35.17
Total pines inspected,.....	698
Total pines infected.....	94
Per cent of pines infected.....	13.5
Waves of infection occurred in 1923 and 1927:	
Total cankers of 1923 origin.....	125
" " originating since 1923.....	1378
Average number cankers per infected tree.....	16
Largest number of cankers on one tree.....	962
Number of pines per acre.....	19.8
Number of <u>R. bracteosum</u> locations per acre.....	1.7
" " <u>R. lacustre</u> " " ".....	5.6
" " <u>R. sanguineum</u> " " ".....	.6
Total number of <u>Ribes</u> locations per acre.....	7.9
Feet live stem of <u>R. bracteosum</u> per acre.....	419
" " " " <u>R. lacustre</u> " " ".....	527
" " " " <u>R. sanguineum</u> " " ".....	125
" " " " all <u>Ribes</u> " " ".....	1071

Per cent of <u>R. bracteosum</u> locations infected.....	26.2
" " " <u>R. lacustre</u> " " .....	2.0
Average per cent leaves infected per infected bush of <u>R. bracteosum</u> .....	35.6
Average per cent leaves infected per infected bush of <u>R. lacustre</u> .....	10.8
No infection found on <u>R. sanguineum</u>	

The chief value of this study, the statistics on which are shown above, lies in the fact that it constitutes a quantitative and impartial statement of pine infection chargeable to a certain amount of Ribes live stem per acre. On this particular area the rust has been present since 1923, and has produced a second wave of infection in 1927. Based on this  $2\frac{1}{2}\%$  cruise the association of pines with over a thousand feet of live stem of Ribes species per acre almost entirely along streams resulted in 13.5% of the pines becoming infected.

Since the strips studied were not contiguous it would not be possible to draw any conclusions relative to the source of infection on any one pine. However, it is believed that such a study gives reliable information on the average pine infection over a large infected area, at a relatively small expenditure of time.

If such studies could be made over many infections thruout the country, it is believed that information of value could be obtained relative to amount of pine infection caused by association with different amounts of Ribes leafage. This information could be used in evaluating Ribes eradication in terms of pine protection until more exact figures are known as a result of permanent plot studies.

In compiling statistics mentioned in this paper, no attempt has been made to show distances of spread from Ribes to pines. An attempt to do this will be made at a later date. It is sufficient for the present to observe that the pines found infected were usually close to Ribes bracteosum locations.

SERVICE  
Roy Calhoun

The preparation of a report on the use of an automobile for a certain period may be a small matter, yet, if it is not complete and accurate it is difficult to make satisfactory monthly reports, cost records for the technical reports, etc.

The automobile reports in many instances do not give sufficient information for preparing our monthly reports.

Please make these reports complete. If it is difficult to do so try making monthly reports to Washington from them and you will find it easier next time.



SUMMARY OF CALIFORNIA ERADICATION BY TYPES  
CAMP 1 AND CAMP 2 COMBINED  
SUMMER 1929

Eradication Type	Acres in Type	Ribes Eradicated				Ave. No. Of Ribes Eradicated Per Acre	Acres per Man-day
		G. roezli	R. nevadense	G. inermis	Total		
Sugar pine timber	2,569.4	238,545	53,975	22	292,542	113.8	2.1
Stream	253.0	37,478	54,120	23,075	114,673	453.2	0.5
Sugar pine cut-over	414.2	41,938	1,879	-	43,817	105.7	3.6
Brush	53.0	21,143	231	-	21,374	403.3	0.5+
Blocked out (Ribes-free)	371.0	-	-	-	-	-	115.9
Totals & Averages	3,660.6	339,104	110,205	23,097	472,406	129.0+	1.9

PRE-ERADICATION, PLUMAS NATIONAL FOREST, CALIFORNIA, 1929  
W. V. Benedict

Area 1. Four miles SE of Meadow Valley in T. 24 N. R. 8 and 9 E., consisting of 2,240 acres of sugar pine type. 1,120 acres on this drainage were eradicated of an average of 133 Ribes per acre the past season. Working conditions are severe, because of the abundance of Ribes occurring in rocky sites. However, Ribes occur largely in patches so that the area may be successfully worked by a camp consisting of both scouts and regular crews. The elevation varies between 3,200 and 4,200 feet. The topography is irregular and rugged. There are three Ribes species present, namely, G. roezli, R. nevadense and G. inermis.

Area 2. Two miles west of Keddie in T. 25 N. R. 8 E., consisting of 3000 acres of sugar pine type. This area is wholly a scouting job. Ribes are scarce, occurring chiefly in moist locations. G. roezli and R. nevadense are the only species of Ribes present. The elevation varies between 3,220 and 4000 feet. The area is situated in a small basin surrounded by the precipitous canyons of the Feather River and Spanish Creek.

Area 3. Nine miles west of Greenville in T. 26 N. R. 8 & 9 E., consisting of 3,200 acres of excellent sugar pine timber. This area is situated in the upper altitudinal range of sugar pine for this latitude (5200-6200 ft.). Ribes are very abundant (averaging more than 200 per acre) over practically the entire area. The four species of Ribes present in the order of their abundance are: G. roezli, R. hallii, G. inermis and R. nevadense. Trees associated with sugar pine are white fir, red fir, Douglas fir, Jeffrey pine, lodgepole pine, yellow pine and incense cedar. An abundance of brush and red fir reproduction adds to the difficulty of

work. The topography is regular and gentle. This area must be worked entirely by intensive crew methods.

Pre-eradication methods used were essentially the same as those employed last year; advance check strips every 20 chains across a section midway between reconnaissance strips, collecting data on 2-chain transects.

### RIBES INFECTIONS IN OREGON - 1929

L. N. Goodding

The outstanding blister rust finds in Oregon during the past summer were those on the Metolius River and those in Curry County. The one on the Metolius found by Partington and Mielke, is our first strike into the sugar pine region with the stage all set. In this place, sugar pines are within a few feet, in many places, of Ribes petiolare. While this constitutes a serious jump for the rust, it has its distinct advantages from the standpoint of investigation and observation. We are almost morally certain that the rust made its first appearance there this year, for there is not the slightest indication of infection on pines, and a careful inspection last fall showed nothing on the currants. The place is accessible, and there is no reason why we cannot work forward at a point where the rust is not several jumps ahead of us. A first contact of the rust with sugar pine in a natural setting; we have a choice box seat and are in time to see the first of the show.

The Curry County infections, located by Root, give food for a lot of speculation. This was a very poor year for the spread of the rust, as proved by its scarcity along the lower Columbia and down the coast. Doubtless, careful scouting - which we did not have time to do - would have revealed the rust in many places, but it was certainly not abundant, and it was in no way comparable to the condition last year. The infections on currants in the Coast Range indicate pine infection in Tillamook or Washington counties, and probably in Polk County also. It is a whale of a jump, however, from Polk County to Curry County. In a region of white pines we would be almost certain to conclude pines much nearer were infected, and this may be the case. The Coast Range is a fine place to lose a pine or two. Riley and I found pines in Washington County where there were supposed to be none, but we had to stumble onto them.

The thought comes: How many times have these particular bushes which Root found been infected before? Maybe we already have the rust permanently established on Grossularia menziesii a bush that gets the spring urge before fall is over, or maybe sugar pines some twenty miles back from the coast are all set to shower the breezes Los Angeles bound next spring.

I fear that George will have too much to do at home to even pay Oregon a visit next year.

RESULTS OF THE SEASON'S WORK IN THE BLACK CURRANT ERADICATION.  
G. A. Root.

The end of October brought to a close the sixth season's work in black currant eradication in California. With a five man crew and their autos, working over an aggregate of 13 man months, Santa Clara, Santa Barbara, Ventura and 3/4 of Los Angeles County were completed. Contrary to expectations, the number of bushes found this year was the smallest of any season. In the four counties, 22 plantings comprising 160 bushes were removed.

The arid climate together with the lack of water was for the most part responsible for the small number of bushes. However, the five years agitation against the black currant has brought about the removal of many bushes by the owners themselves during this period.

THE CONTRIBUTION OF TEMPORARY SUMMER EMPLOYEES TO  
FIELD - FORESTRY RESEARCH STUDIES.

W. A. Rockie.

During the several past field seasons, research studies of Ribes have been conducted, to learn more about the life history of Ribes.

The temporary men used upon these field studies have included men at various stages of specialization in such professions as agriculture, botany, chemistry, economics, engineering, forestry, history, horticulture, mathematics, pathology, physical education, physics and zoology. A considerable variety of training was represented. In grade they included university professors, high school teachers, graduate research students and all stages of undergraduates. They have included men with Ph.D. degrees, men with master's degrees, others with bachelor's degrees, and others who did not yet rate a degree of any kind. In age, they have ranged from 18 to more than 50 years. In personal inclination, they included men who could adapt themselves to any situation, and others who had no conception of the meaning of adaptation.

The value of these men to the job is treated from four different angles: first, as related to his selected specialization; second, as to the grade of training and experience to which he has attained; third, as to his age, and, fourth, as to his personal inclinations and desires.

There appears to be "neither rhyme nor reason" to the value of a man as judged by his selected line of life work. The most valuable work came from men in work totally different from that of forestry. Good suggestions and ideas came from almost every individual under observation, but the really outstanding good work came from individuals specializing



in botany, chemistry, forestry, horticulture, pathology, physics and zoology.

Judging these men from the grade or rank to which they have attained, there appears even less chance of generalization. The university faculty members were not all of outstanding value to the job, although their average value was much higher than that of the undergraduate student. In general, the more highly trained the man, the more valuable to the job he proved to be. Specifically, the most accurate work in taking field data was done by a student who had finished his freshman year in college, although he was a very noteworthy exception to the general rule. On the other hand, the most valuable contributions to the work at hand were made by a university professor whose specialized training was very foreign to this field study.

Considering the men solely from the standpoint of age, the older men were unquestionably of more value to the job, and the average value of the younger men was rather low. However, exceptions to this general rule were noted toward both age extremes. The two men most valuable to the work included one of the oldest, and one of the youngest men employed.

Considering the men solely from their personal inclinations and desires, it is again hard to attempt generalizations. It was noted that the field in which an individual had specialized, did not always express his natural inclinations and desires. In fact, some of those whose work consisted solely of indoor laboratory work, were the closest to nature when they got outside. In contrast, one of the men whose work dealt entirely with nature, wished to be at inside work all of the time. One individual who had specialized and was following a very academic indoor teaching subject had no enthusiasm except for the outdoors. A cross-sectional view of the individual considered herewith, brings out the commonplace occurrence of the square peg in the round hole and vice versa.

The selection of temporary men for a field study of this sort is very much a game of chance, in that the most promising candidate for a given piece of work may prove a failure for the particular job, even though a perfectly capable workman. In direct contrast to such a case is that of a much less promising candidate who turns out to be the mainstay on the job. It appears from our experience to date that one cannot always anticipate in advance, the value of a given individual to a certain piece of work, and that the question can be answered only by a tryout on the job.

In conclusion, the value of an individual to a job such as this, appears to have very little relation either to his profession, his experience, his age or his personal inclinations and desires.

SOME ADO ABOUT SOMETHING.

S. N. Wyckoff.

At the risk of being considered over particular, I should like to take issue with a brief article appearing in the October News Letter concerning the use of an old friend, the word "data". The writer of that article seems to feel that the controversy over the word (if controversy it can be termed) was one between high-brows and low-brows, the assumption being suggested that, according to the old definition, a high-brow is one who is educated beyond his intelligence.

It seems to me that the argument is rather between those who value accuracy and those who do not. If we hark back to our younger days we may remember the Latin noun "datum", which might be literally translated as "that which is given". The plural of this noun is, of course, "data". This Latin noun has been incorporated into our language. The singular form can be seen on the topographical maps of the U. S. Geological Survey, in the statement "Datum is sea level". The word "data" appears in Webster's New International Dictionary only as the plural of "datum".

Where is the argument? It is merely a simple matter of being right or wrong. The English language is a great institution if properly used as a medium of expression but it sometimes exhibits amazing vindictiveness if we endeavor to punch holes in it.

If the writer of the article in question is truly consistent, we can easily find out who it is by listening for such statements as "The ashes is cold" or "The scissors is dull".

NOTES.

Doctor Haven Metcalf, Chief of the Office of Forest Pathology, Washington, D. C., was a visitor to the Spokane Office during October.

\* \* \*

S. N. Wyckoff left on November 14 on a two weeks visit to the investigative work in California.

\* \* \*

Ed. Joy is getting around again after spending several days in the hospital. We are glad to see him well on the way to complete health.



D. W. Nelson and Miss Helen Wicks were married in Missoula, Montana on November 9. Congratulations, Don!

\* \* \*

During late October and early November, W. A. Rockie and D. R. Miller spent 12 days in the field on several trips to check over ecology plots.

\* \* \*

On November 1, Harry Crossley relieved B. A. Ganoung on quarantine inspection duty at Spokane, Washington. Kermit Miller started inspection work on November 15 and relieved Crossley on November 20.

\* \* \*

M. C. Riley returned from Oregon on November 4, and is now working on California ecology data. We venture the opinion that he must have had some experience as a mule skinner.

\* \* \*

During the latter part of October, Root and d'Urbal drove to Strawberry, California where 100 R. nevadense and 100 G. roezli bushes were obtained for the Office of Forest Pathology, Portland, Oregon.

\* \* \*

Guernsey and Glasgow left on November 18 for Bovill, Elk River, Headquarters and Musselshell Ranger Station, Idaho to check over supplies, equipment and chemicals which are stored at these points.



18





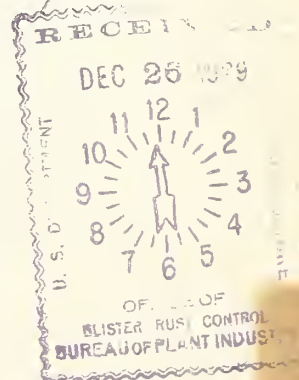
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U. S. Department of Agriculture  
Bureau of Plant Industry  
Western Office of Blister Rust Control  
Spokane, Washington







## THE COMPLIMENTS OF THE SEASON!

In this, the last News Letter of the Old Year, we wish to extend to all Blister Rusters our Best Wishes for a Happy Yuletide and a Bright and Prosperous New Year.

May the old pocketbook weather the approaching storm and may you continue in Blissful Ignorance of the Truth about Donner and Blitzen and old Graybeard Mirth, their pot-bellied driver.

## COOPERATIVE RIBES ERADICATION, 1929

During the summer of 1929 large-scale application of stream type eradication was carried out on the lands of the Clearwater and Potlatch Timber Protective Associations. This work was financed on a cooperative basis, the timber protective associations concerned, the State of Idaho and the Office of Blister Rust Control providing funds for the purpose.

The information given in this brief treatment of these projects is taken from the annual reports of Anderson and Guernsey.

On both associations Ribes petiolare was eradicated by spraying with a 10% solution of Atlacide or sodium chlorate with calcium chloride; all other species of Ribes were removed by hand pulling.

### Clearwater Timber Protective Association

On the lands of the Clearwater Timber Protective Association a total of 21,500 acres of white pine type was protected. The work was carried on in the general vicinity of Headquarters, Idaho. Two camps of 23 men each were used, one at the junction of Deer Creek and the South Fork of Reed's Creek, the other on Loop Creek near its junction with Alder Creek. It became necessary to establish small auxiliary camps on Upper Alder Creek, on the North and South Forks of Reed's Creek and on Deer Creek to work areas too far removed to be worked conveniently from main camps. (See map Page 120.)

This area was chosen on account of the high timber values represented and the likelihood of invasion by blister rust. The protected region is heavily timbered, largely with pure stands of white pine with nearly all age classes represented but most of which falls within the "mature" and "just coming mature" classes. These excellent stands of timber were threatened by the invasion of the rust. In 1928, Ribes infection was found on both the North and South Forks of Reed's Creek. This year a small center of pine infection was located on the North Fork of Reed's Creek, within the eradicated area. This area was well chosen both from the point of view of forestalling serious damage by blister rust and from the standpoint of timber values protected. The value of this work is further enhanced by the fact that the Clearwater

Timber Company, the principal owner of white pine land in the region, is definitely committed to a policy of sustained yield management of its timber lands.

This region has an unusually large percentage of the total acreage classed as stream type. Numerous side drainages have networks of tributaries which fan out into many smaller tributaries, seepages and flat swampy areas. R. petiolare occurred along practically every stream. No attempt was made to count bushes sprayed. Concentrations were classified as light, medium and heavy, with the medium class predominating.

Some of the figures on the season's work on this association are as follows:

#### Hand Pulling

Area eradicated - 900.8 acres.  
No. of Ribes pulled - 253,133 (R. lacustre - 226,494;  
R. petiolare - 22,961; G. inermis - 3,678).  
No. of Ribes per acre - 281.  
Cost per acre - \$8.12.

#### Spraying

Area sprayed - 935.7 acres.  
Amount of spray solution used - 25,229 gallons.  
Cost per acre - \$16.56.

#### Both Methods

Total area eradicated - 1,836.5 acres.  
Average cost per acre - \$12.22.  
Total area protected - 21,500 acres.  
Cost of protection per acre - \$1.04.

NOTE - Cost of protection given here represents the average cost per acre of the actual field operation. When the cost of carrying a supervisory personnel for the full year and expenses for equipment, warehousing, overhauling and miscellaneous supplies are included the total cost of this operation was \$30,000 or an average cost of protection per acre of \$1.40.

#### Potlatch Timber Protective Association

In the general vicinity of Elk River, Idaho, 57,010 acres of white pine type were protected. Two camps were operated; one worked the headwaters of the East Fork of Potlatch Creek and was moved to Round Meadow Creek, the second worked the Gold Creek drainage, Deep Creek drainage and lower Long Meadow Creek area.  
(See map Page 120)

On these areas a pack string was used to transport supplies and equipment to camps removed from roads and to move chemical supplies to points along streams where it was available for spraying crews. A half-ton truck was used by the project leader to haul general supplies between camps and in moving small details of men to eradication blocks some distance away from main camps.



White pine predominated in the upper East Fork of Potlatch Creek, Gold Creek and Deep Creek drainages. The Round Meadow and Long Meadow Creek areas were mainly white pine type with about twenty per cent in the pole class and the rest mature.

Ribes concentrations were not so heavy nor were species of Ribes so uniformly distributed as on the Clearwater Association lands. A high percentage of the Potlatch area was eradicated by hand pulling, with the ubiquitous R. lacustre requiring most attention.

Two centers of pine infection were located during the summer on this eradication area. Five infected trees with five cankers were found at the junction of Elk and Deep Creeks. A larger center of infection was discovered at the junction of Long Meadow and Three Bear creeks. This infection area comprised 60 acres of white pine type with approximately 5 per cent of the trees infected. Upland Ribes were eradicated from this area beyond the limits of pine infection. This eradication of 300 acres of dense pole type, having 62 Ribes per acre, is included in acreage and cost figures given below:

#### Hand Pulling

Area eradicated - 2,918 acres.

No. of Ribes pulled - 781,384 (R. lacustre - 737,719;

R. viscosissimum - 10,314; R. petiolare - 26,928;

G. inermis - 1,427, G. irrigua - 4,996).

No. of Ribes per acre - 267.

Cost per acre - \$5.60.

#### Spraying

Area sprayed - 181.4 acres.

Amount of spray solution used - 9,859 gallons.

Cost per acre - \$23.36.

#### Both Methods

Total area eradicated - 3,099.4 acres.

Average cost per acre - \$6.65.

Total area protected - 57,010 acres.

Cost of protection per acre - \$0.36.

**NOTE** - Cost of protection given here represents the average cost per acre of the actual field operation. When the cost of carrying a supervisory personnel for the full year and expenses for equipment, warehousing, overhauling and miscellaneous supplies are included the total cost of this operation was \$30,000 or an average cost of protection per acre of \$0.53.

#### ODDITIES OF NATURE IN YOSEMITE

##### G. A. Root

Under this caption in the August issue of Yosemite Nature Notes is an article entitled, "Has a Gooseberry Bush Turned Parasite?" It starts out as follows: "The ranger-naturalist in taking a party

from the Yosemite Lodge on a nature walking trip never misses the opportunity to point to a most unnatural phenomenon - a gooseberry bush growing high in a great black oak tree. It never fails to bring expressions of astonishment from the members of the group, nearly all of whom have seen many gooseberry bushes but not on the limb of a tree". (They evidently have not followed a blister rust career.)

The story purports to show that the bush is receiving its sustenance from the living bark of the oak, its roots having penetrated this through some crack or found entrance through some hole bored by insects. It further conveys the idea that the oak is endeavoring to overcome this strange parasite, and to smother or kill it as so often does a host when attacked by mistletoe. It is true the bush is not in a vigorous condition; its unusual habitat may account for this but an examination revealed a heavy infestation of oyster shell scale which was sapping its strength.

The bush, in question, a G. roezli, with approximately 60 feet of live stem, is about 10 feet above the ground, lodged in the end of a 10 inch branch, which has broken off about two feet from the main trunk. The oak tree is about three feet in diameter, hollow and broken off about 16 feet from its base. At this height, an entrance may be made into the hollow trunk. One or two side limbs of considerable size supply the necessary food to keep it alive.

The writer had the pleasure of making an examination of this curiosity with a student of the summer school, to whom a study of this was assigned as a thesis. With a sixteen foot ladder, hammer and chisel an endeavor was made to find the true condition of affairs.

With no little difficulty it was found that the roots, two large main ones, extending from the crown held fast at the end of the stub, and passing through its hollow interior, entered the trunk taking a downward course and burying themselves in the deteriorated heart wood now a friable mass. This filled the trunk up to the point of entrance of the roots. The ends of the roots could not be reached after probing two or more feet in the debris. Every indication pointed that they extended five or six feet straight down and did not enter the cambium or growing bark. Sufficient moisture was present to preclude the necessity of going into living bark for water. The crown of the bush, held fairly secure at the stub opening by a growing callus encircling this, could be moved or twisted in place, thus showing no intimate contact with the callus, and disproving the idea of parasitism at this point.

To have found this bush a true parasite would indeed have been a surprise and certainly an oddity of nature. The position of the bush and the attending condition of its host or medium led the writer to question the validity of parasitism. Has anyone ever noticed real parasitism in the case of a *Ribes* bush?

(In the News Letter for September 15, 1928, Root reported the occurrence of a *Ribes* growing from the branch of a giant redwood. They grow 'em high in California.)



## ANNUAL CONFERENCE OF WESTERN BLISTER RUST PERSONNEL

The annual conference of Western Blister Rust Personnel will be held in the Spokane Office, January 6-11, 1930. Talks on the various projects with resultant discussions should give each one a clearer conception of blister rust work as a whole and a better idea of the inter-relation of the projects in working toward our ultimate aim of practical and perfected control of blister rust.

It might be pertinent to the purpose of this conference to review at this time the principles governing control of a recently introduced plant pest as propounded by S. B. Detwiler, Principal Pathologist in charge of blister rust work, in a paper delivered before the class in Forest Protection at Yale University.

### PRINCIPLES GOVERNING CONTROL OF RECENTLY INTRODUCED PLANT PEST. (Abridged)

The following principles apply mainly to control of a recently introduced plant pest by a large political unit, such as a state or the nation. They have a bearing because foresters of the future will necessarily have to take active leadership in work of this character. These principles are:

1. Necessity for basic scientific research. Scientific research is basic and primary to successful control of plant pests. Spend money generously for scientific research on the pest whose control is being considered or attempted, but insure that such research is closely coordinated with practical control efforts.
2. Prevention of artificial spread. The early establishment of a quarantine or quarantines is essential to prevent further spread of the pest by artificial means, but, to be most effective, quarantines established should be based on a rapid preliminary investigation of the mode of entry of the pest and careful summarization of the available facts of its nature, habits and area of establishment.
3. Determination of extent of spread by scientific methods. Scouting, or a systematic survey to determine extent of spread and degree of establishment of the pest, largely decides the scope and character of the plan of control. Extreme care must be taken in planning and organizing scouting or the control program will be based on mistaken hypotheses due to preventable errors.
4. Basing of control policy and program on facts, and arrival at decisions in open conference. A control program once under way cannot be changed readily in its scope, amount of funds appropriated or general plan of procedure. Hence, the final summarization of scouting results must be a concise, clear, unbiased presentation of the

facts, accompanied by first class maps graphically presenting the fundamental data governing the control problem.

The decision as to the advisability of undertaking control work should be made by an open conference of representatives of the industries affected, scientific and technical authorities in the subjects involved, conservation and trade organizations and the general public. If control is decided as necessary and feasible, it is essential that the conference outline the main features of a clear-cut, tangible control policy and program covering a period of years.

If this program is based on scientifically proved data, the further information which will be gained in the course of its application will not result in any fundamental changes, but only in secondary variations in the mode of application of these basic facts.

5. Basing of control work on legal authority. Leadership in any general pest control campaign is a function of government. Broad general policies, based on adequate regulatory legislation, need to be formulated. Careful thought is required to balance such policies and legislation so as to properly safeguard public welfare without improperly infringing on individual rights and without seriously handicapping control efforts.

6. Service and educational work essential to extensive application of control. In a control program of considerable extent, and particularly one involving general sanitation or destruction of host plants, the public must be fully apprised of the values threatened, the seriousness of the pest, and the necessity of cooperation. Service work is needed to get land owners, or the persons responsible for the production of the crop, to undertake and effectively carry out the control measures as soon as the experimental stage of control is passed. The state or nation may bear part or all of the cost of control during the emergency period, but ultimately the burden must be assumed by the crop producer and the cost born by the crop.

#### WHAT DO YOU KNOW ABOUT THAT?

At the regular monthly meeting of the personnel of the Spokane Office on December 4, 1929 several questions concerning procedure or policy were discussed. The practice was initiated, and will be continued, of submitting written questions to the chairman before the meeting. Anyone from the outside offices wishing to submit questions should send them in to D. R. Miller who was railroaded unanimously into the chairmanship of the next meeting.

The questions discussed at the last meeting, with authoritative answers by Calhoun, are as follows:

1. Q. Detail the routine of making a shipment by Government bill of lading and what procedure should you follow in case the original is lost?

A. (a) Freight shipments should be clearly addressed to consignee and bear return address of sender.

(b) Express shipments require the address of the consignee and address of the sender entered thereon twice.

(c) Freight and express shipments sent to Washington, D. C. should be addressed to the office for which intended with the name of the party for whose attention it is sent entered below.

(d) All spaces on the bill of lading requiring information should be completed including weight separately for each class of commodity covered thereby; shipping order should be signed by the consignor and delivered to the agent of the transportation company; and original and memorandum should be signed by the agent of the transportation company and returned to consignor who should immediately forward the memorandum to the Spokane Office and the original to the consignee. The consignee will fill out the certificate of receipt and exchange this original for the shipment without payment of charges.

(e) Should the original become lost the agent at destination will ordinarily deliver the shipment without the bill of lading in which case immediate steps should be taken to locate such bill of lading. If same can not be located the Spokane Office will substitute a certificate in lieu of bill of lading which should be carefully filled out. The original of this should be given to the agent of the transportation company and carbon sent to the Spokane Office with the certificate at bottom executed by the agent of the transportation company.

2. Q. Should an employee of the U. S. Government be urged to make claim for compensation in cases of minor injury involving only minor losses in wages when there is any possibility of recurrence of disability from that cause, even against his wishes? Why?

A. Regulations concerning duties of employees, official superiors, medical officers, and others (C.A. 18) does not state that employees injured on official work should be urged to make claim for compensation for either minor or major injuries. Such urge would appear to be unnecessary since natural desire to secure compensation is usually strong enough without urging.

All employees should however, be kept advised of "what to do when injured" and "benefits provided by law". All facilities for reports of injuries, securing treatment and claiming compensation should be kept available for injured employees and should be handled promptly and accurately in accordance with the laws governing and regulations of the Compensation Commission.

Pertinent to the question as promulgated above and under the conditions mentioned such employees should be urged to make a report of the injury.

See paragraphs 27 to 51 of C. A. 18 and the section marked



"Forms used in reporting injuries and making claims under the compensation act". As a supervisor of men in the field it is your duty to be thoroughly familiar with the regulations given in C. A. 18.

3. Q. What is the procedure as regards tax exemption slips and method of buying gas in the following cases:

- a. With reference to Form 1034 when out of town?
- b. With reference to paying cash?
- c. With reference to Standard Oil Co., credit cards?

A. (a) Where the dealer is one who pays the tax direct to the state or makes a practice of claiming refunds from the state on account of gas taxes, he should be given a tax exemption slip and the 1034 prepared in the usual manner showing it is ex-tax. (The tax exemption slip furnished by the office should cover the gas purchased ex-tax). If the dealer does not pay tax direct to the state and does not secure refunds (or the amount of tax is so small that expenses involved in securing refund exceeds the amount to be claimed) the voucher should be prepared with an extra complete signed copy including the tax and forwarded to Spokane for payment. The duplicate should be marked "duplicate - transit purchase - contract impracticable - refund to be claimed - dealer does (or does not) pay the tax". The amount of the tax must be shown.

(b) When paying cash and the tax is deducted as above give the usual tax exemption slip and show "no tax included". If the tax is not deducted take a subvoucher in duplicate, mark one copy "duplicate" and show the amount of tax included on both copies. The expense account and subvoucher should show with the claim for gas "transit purchase - tax refund to be claimed - contract impracticable - dealer does (or does not) pay the tax".

(c) Issue a tax exemption slip for each purchase.

In cases where dealers are reluctant to give tax reduction pay cash including tax and take duplicate receipts as above or make out 1034 in duplicate including tax as above. For small purchases at intermittent periods or scattered places it is better to include the tax in the payment as above.

4. Q. What procedure is to be followed in the matter of renting storage space for Government equipment or Government trucks, for rental of team and wagon, automobile, camp buildings or camp sites for a period of a full month or more, when the total estimated rental cost will not exceed \$50.00 and will therefore not require formal bids?

A. The regulations require a short term rental or hire agreement for less than 12 months and within a fiscal year, to be submitted in duplicate. (This agreement may also cover amounts up to \$500 but

above \$50.00 competition must be secured and that can best be done through the process of bids.)

Forms for short term rental or hire agreements may be secured from the Spokane Office and are self-explanatory and simple of execution.

In any case settlement would later be made on the usual 1034 submitted to the Spokane Office.

5. Q. In what way are the State Leader's salary and expenses and salary of a man from a foreign project who works up the data shown in a report for a project?

A. These salaries and expenses are not ordinarily included in the actual field costs of eradication, reconnaissance, etc. They would then only be included in a statement of costs of projects as related to the allotment with a reconciliation between cost of operating the projects and field costs where desirable.

6. Q. In figuring actual field costs, what period of salaries, expenses etc. is included therein? Do the various projects in their annual reports show a statement including all salaries and expenses for a year and if so how would you make up at this time a report for the calendar year 1929 when all items are not paid? Are annual reports always made on the basis of the calendar year?

A. The period of salaries and expenses to be included in actual field costs should be determined by a conference of project leaders and should be on a basis deemed equitable and desirable for the project concerned.

The various projects should ordinarily include in the annual report at some point a statement including salaries and expenses for a year. (This might best be shown in the general financial statement included in the annual report.) If it is necessary to make such a statement before the end of the period it would include estimates for the period not elapsed. This can be very accurately done when the salaries and expenses are of permanent employees.

At the present time and under normal conditions annual reports are made on the basis of the calendar year.

"THE DIE IS CAST."

G. A. Root

Speculation as to the time of entry of the blister rust into California has caused no little interest for the past several years. Predictions ranging from two to five year have been made at various times. It now seems that the rust is first due to



enter the state via the coast, the route which has been conceded the most likely.

The Curry County infections in Oregon lead one to believe that the disease is probably in California. The capers which C. ribicola cuts at times rather strengthen this viewpoint. We have no particular excuse to offer if the rust is present in California and we did not find it. We believe our scouting program in Del Norte County (next to the Oregon line) was commensurate with the existing conditions relative to the known points of infection farther north. There is a psychological factor involved, as all will agree that the finding of the rust in an unforeseen locality, gives added interest which in turn enhances the powers of observation and make the scouting much more efficient.

With the cards on the table, thus placed at the end of 1929, there is ample reason to believe that the rust will be found in California in 1930.

My friend, Goodding, says something about "a choice box seat to see the first of the show" in the Metolius region -- we down here will have to be content with a seat in the bleachers. There is this possibility, however, of viewing the rust in its association with sugar pine on the California coast. We might as well have two shows going on as one.

Don't fail to pay us a visit next season, Leslie. You may be morally bound to reach the California line if you plan "to work forward at a point where the rust is not several jumps ahead of us". Cross the line and we'll welcome you.

#### NOTES

A meeting of the executive committee of the Western White Pine Blister Rust Conference was held in Spokane, Washington on December 10. The general program of blister rust control was discussed. An interesting announcement was made by Forest Service officials to the effect that \$25,000 would probably be available during the next fiscal year to be expended for blister rust work in District 1.

\* \* \*

Messrs. Lachmund and Mielke of the Portland Office of Forest Pathology were visitors to the Spokane Office December 10 and 11.

\* \* \*

Some of the Blister Rusters are spending the Holiday Season thusly: Miss McWold is visiting her home in City Point, Wisconsin; Chapman, Staat and Nelson are going to Missoula, Montana; Mr. and Mrs. Guernsey are visiting in Boise, Idaho and Ed. Joy is driving to Portland, Oregon.

Here's wishing you all "The Complaints of the Season!"

Good-bye '29 - Hello '30.

# RIBES ERADICATION

1929.

